DOCUMENT RESUME

ED 242 984 CE 038 862

AUTHOR Kapp, Ann B.; Knickerbocker, Addie H.
TITLE Computer Literacy Development. A Project Report.
INSTITUTION Northeast Louisiana Univ., Monroe.
SPONS AGENCY Louisiana State Dept. of Education, Baton Rouge. Div. of Vocational Education.
PUB DATE Nov 83
NOTE 91p.
PUB TYPE Reports - Descriptive (141) -- Reference Materials - Bibliographies (131)

EDRS PRICE MF01/PC04 Plus Postage.
DESCRIPTORS Annotated Bibliographies; Computer Assisted Instruction; *Computer Literacy; *Computer Managed Instruction; *Computer Oriented Programs; *Computer Software; Educational Practices; Educational Technology; Elementary Secondary Education; Glossaries; *Inservice Teacher Education; Instructional Development; Instructional Materials; Literature Reviews; Media Selection; National Surveys; Postsecondary Education; Program Administration; Programing; Questionnaires; Resources; Teacher Workshops; *Vocational Education Teachers
IDENTIFIERS Computer Literacy Develop Proj Research Training

ABSTRACT

The Computer Literacy Development Project in Research and Training in Vocational Education was a multi-phased project designed to determine the feasibility of changing the attitudes of vocational educators toward the use of computers, to identify the classroom and administrative applications of microcomputers, to determine the applications of microcomputers in vocational programs in other states, and to develop and implement a computer literacy workshop for vocational educators. After reviewing available literature and analyzing survey data detailing the responses of 45 state directors of vocational education concerning the vocational classroom and administrative use of microcomputers in their respective states, the researchers developed and presented a teacher workshop at Northeast Louisiana University in Monroe, Louisiana. Included among the topics addressed during the workshop were the following: using and caring for computers, word processing, telecomputing, developing and using test banks, BASIC programming, and developing and implementing a database management system. (Appendixes to this report include the workshop materials; an annotated bibliography that covers such topics as children and computers, computer literacy, legal issues, software and hardware selection, and the use of telecomputing; the project survey instrument; and selected references from the project literature review.) (MN)

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COMPUTER LITERACY DEVELOPMENT
A PROJECT REPORT

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Research and Training Project
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CE 033 662

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COMPUTER LITERACY DEVELOPMENT

The computer age is here; there is no turning back. If vocational educators can develop computer literacy now, they will be able to progress as academic leaders in computer technology. This was the premise for the Computer Literacy Development project in Research and Training in Vocational Education done at Northeast Louisiana University in 1983.

Fear, frustration, confusion, and concern about computers are evident everywhere even though computers are becoming more and more a part of the lives of all persons in the 1980's. Vocational educators must gain an understanding and appreciation of their use, be able to identify tasks that lend themselves to computer utilization, and be able to help students adjust to this new technology.

The objectives of the study were as follows:

1. To find if it was possible to change the attitudes of a selected group of vocational educators from one of fear and frustration concerning computers to one of acceptance, understanding, and excitement.

2. To identify ways that microcomputers could be used in the classroom and administratively to improve vocational education in the State of Louisiana.

3. To develop computer literacy with a selected group of educators.

4. To find how microcomputers had been used in vocational education in other states and to benefit from their activities.

The objectives were to be accomplished through a summer 1983 workshop to be held on the Northeast Louisiana University campus and two surveys, one of literature and one of state vocational education departments throughout the nation.

THE WORKSHOP

A workshop was held on the Northeast Louisiana University campus June 13 through July 1, 1983, for a selected group of vocational educators. The workshop instructors, Dr. Ann Kapp and Dr. Paul Ohme, used the following format for the class:

Week 1 --- Introduction, Course Requirements
Use and Care, Basic Operations
Terminology
Word Processing
Spelling Check
Telecomputing

Week 2 --- TEST BANK
Calculations Programs
File Management Programs
Inventories, Mailing Lists

Week 3 --- BASIC Programming
Programs for Specialty Areas

Objectives to be accomplished by the students in the workshop were to . . .

1. develop an appreciation for and knowledge of ways the microcomputer can be used in the home, the classroom, and in business.
2. overcome fear and frustration and be able to use the computer with confidence.
3. use the computer to perform work to ease his/her workload or make his/her life more pleasant.
4. demonstrate a knowledge of computer terminology and operation.
5. identify software to perform needed tasks.
6. set up guidelines for use in selection of hardware and software.

A copy of the requirements for the course can be found in the appendix as can copies of operating instructions and terminology used in the class.

Each student was required to compile a list of software that would be useful in the classroom as well as an annotated bibliography of computer literacy articles that would be helpful to themselves and others concerned with developing computer literacy. The data compiled have been evaluated and organized and can be found in this report in the bibliography and software sections.

From the attitude surveys, it was evident that after a short period of hands-on experience with computers, vocational educators could overcome any fears, frustrations, and concerns that they might have had concerning the use of computers. All participants indicated that they would encourage others to learn more about computers through college courses, and half of the participants responded that they would suggest continuing education workshops and "on your own" instruction, also.

All participants, at the end of the workshop, indicated that they believed the computer was a piece of equipment that could work for them and make their lives easier, and that they had enjoyed using the microcomputer and felt that they would continue to use it. Only two participants indicated that they did not plan to buy a microcomputer for personal use, while all indicated that they would request one for school use.

More participants marked teaching as the most important purpose for which they planned to use the computer in the future. Other responses receiving high ratings were record keeping and word processing.

At the end of the workshop the issues rated by most participants as being major problems were capital costs, lack of funds to purchase software, and lack of expertise to create software for use at school or home. Issues rated by most participants as being no problem were inappropriateness for

curriculum area, lack of student interest, lack of interest, and threat to job security.

At the beginning of the workshop lack of training and lack of expertise to create software for their own use were marked as the two major problems. The same issues were rated at both the beginning and end as being no problem.

A survey will be made at the end of the 1983-84 school year to determine if the participants were able to use their computer expertise in their workplace following the workshop. This survey, coupled with the number who choose to seek further computer education, will be an indication of the success of the workshop.

SURVEY OF LITERATURE

Because of to the relative newness of the topic of computer literacy, most of the information has been found in journals rather than books. A Solar search, using the key words "computer literacy" and "vocational education," and all subject matter areas therein, produced data from 14 articles, most of which appeared in business publications. Only those references that have been written in the last two years were included in deference to the rapid changes occurring in the computer industry.

Predictions concerning the use of miniature computers and microprocessors have indicated that expansion will continue into the year 2000, thus affecting all vocational education fields

(Uthe, 1982). According to information released by the U.S. Bureau of Labor Statistics, computer occupations will be the most rapidly growing occupational cluster over the next decade providing job opportunities for two million Americans by 1990 ("Jobs for Two Million Workers," Voc Ed, April 1982.) Uhlig (1982) has warned parents that 16 year old youth in 1984, who are not computer literate, will be as disadvantaged in our culture as those who do not drive a car.

Definitions of computer literacy, according to Huntington (1982), "range from the ability to load and execute programs in a useful manner to the abilities to write and understand computer languages like BASIC and machine code." (p. 34). Therefore, a more inclusive interpretation based on efficient use and comprehension of the language as well as the electronic aspects was recommended, although it was recognized that it is possible to use a computer effectively without a knowledge of programming.

Uhlig (1982) encouraged a differentiation between awareness and computer literacy. It was suggested that one could exist without the other. In his opinion, computer literacy should be explained in terms of the needs and hopes of the groups such as teachers, administrators, teacher-educators, or students.

One of the important factors that influences a personal decision to invest in a home computer is the general attitude toward computers. Collins (1982) maintained that many people are intimidated by electronic equipment and threatened by the

mistaken belief that computers can think. Others visualize the effects of a computerized world as dehumanizing. Marshall (1981) contended that the learner in computer-assisted instruction receives more positive feedback than in a regular classroom. This kind of learning is hardly dehumanizing to the student or the teacher whose role will be changed but not eliminated.

According to Farris (1982) some women may avoid computers because of a fear of appearing unintelligent and an anxiety about breaking the machine. Computer stores that appear to be a male domain have increased computer phobia of some females.

An additional hindrance to becoming computer literate is not only the rapidly changing computer technology but also the frequent updating of computer capabilities and software (Uthe, 1982). It is difficult to know how to select the hardware and the software for personal or professional use.

Expense of equipment, according to Caldwell (1982), is not the problem it once was. Reduced costs have brought computer based instruction within an affordable range for most educational programs. Collins (1982) cautioned consumers of home computers to evaluate the capabilities of memory space, the potential for add-ons, the kind of display features or monitor, and the type of printer. There is a wide price range from a number of reputable manufacturers who service their equipment. Nasman (1982) admonished administrators to serve the needs of the instructional

program rather than limiting the purchase of computers to one model or brand.

Selection of software is another factor related to computer literacy. Dean (1982) cited a lack of useful programs as a major problem in effective use.

Dean (1982) pointed out the difficulty in evaluating software when the developer refuses to send programs to be previewed. When software is available for vocational classes, the quality may be inferior. Even the printed form may contain errors that cause problems in transcribing it (Collins, 1982). Alexander (1982) recommended the following considerations in appraising software: 1) Is it compatible with your computer system? 2) Is it instructionally sound in the use of graphics, sound, color, and ease of use? 3) Is it appropriate for the intended audience? and 4) Is the content accurate and free of stereotypes? Other issues were raised by Huntington (1982): 1) Can the courseware be adapted for local applications? 2) Is it cost effective? 3) What demands are put on the teaching personnel? 4) Is it motivational? 5) Is it compatible with the curriculum? and 6) Does it provide a record of student performance?

The lack of a suitable computer language, which is easy to learn and use in a natural way by teachers, was seen by Dean (1982) as an obstacle to computer literacy.

Another consideration in computer utilization is the maintenance. Kock (1982) offered suggestions for a trouble free

environment based on the correct room temperature, a grounded electrical outlet, and the proper care of diskettes. The use of a back up system was recommended to prevent the loss of important programs (Collins, 1982 and Kock, 1982.)

Security of equipment was recognized by Kock (1982) as a special problem of the costly, movable microcomputers. Additionally, Uthe (1982) mentioned the concern about computer crimes by illegal users.

It was the opinion of Nasman (1982) that the promotion of computer literacy for all vocational educators would be hindered by a peoples' tendency of trying to "protect the turf" of their own subject matter area. However, as computer use expands, it is predicted that computer-related training will be added to non-computer curriculums. ("Jobs for Two Million Workers," Voc Ed, April 1982).

In spite of the fact that there is no consensus as to minimal competencies needed for computer literacy (Bruwelheide, 1982), there are some general suggestions as to areas of training.

In an attempt to combat computer phobia, Farris (1982) suggested that one recognize emotional reactions and feelings and try to deal with them positively. Other recommendations were to visit computer stores and to participate in seminars and in-service programs.

Lawton and Gerschner's ideas (1982) for expanding computer literacy included goal setting, consideration of those affected by computers, and resolution of technical problems. Uhlig's suggestions (1982) were to 1) Begin a systematic reading program, 2) Be prepared to commit personal and professional time, 3) Be willing to learn from the young, and 4) Be prepared to obligate your own funds to enable you to become skilled in the use of the computer.

Gring (1982) found that the hiring of a computer coordinator was helpful in establishing computer literacy in his school system. Johnson (1981) referred to the need for locating an in-house advocate who could provide leadership in the use of computers.

Uthe (1982) urged that vocational educators become computer literate by taking two courses on what a computer is and what it does, and simple programming and using software in pertinent subject matter areas.

While there is a lack of agreement on many aspects of computer literacy, there is no doubt about the need for vocational educators to become efficient in the use of computers.

SURVEY OF COMPUTER UTILIZATION IN VOCATIONAL EDUCATION

On June 3, 1983, 54 letters and surveys were mailed to state directors of vocational education. Twenty-five follow-up letters were sent on June 24. (See the Appendix for a copy of the letters

and survey.) The respondents totaled 45, or [illegible] percent. A list of the states that were represented in this study may be found in the Appendix. The designated contact person on computer literacy and utilization has been listed also.

The participants indicated that 35 (78%) of the states or territories have purchased microcomputers with vocational funds between June 30, 1982, and July 1, 1983. Eight did not buy microcomputers with vocational funds. Some respondents indicated that they had bought microcomputers with other kinds of funds.

The distribution in the purchase of microcomputers has been categorized in Table I.

TABLE I

PURCHASE OF MICROCOMPUTERS

AREA	NUMBERS 1 - 10	11 - 50	over 50
Junior High/Secondary Schools	3 (7%)	10 (22%)	19 (42%)
Vocational/Technical Schools	1 (2%)	13 (29%)	18 (40%)
Colleges/Universities	5 (11%)	6 (13%)	4 (9%)
State Department	26 (58%)	--	--

Some states provided detailed reports on the use of microcomputers within the schools. Information on subject matter areas and the brands of microcomputers was included.

In response to the survey, the most frequently mentioned use was word processing by 43 (96%) of the respondents. Teaching (36 or 80%), vocational records (35 or 78%), and inventory (32 or 71%) were other answers that were given high priority. Record

keeping (28 or 62%), budgeting (27 or 60%), and scheduling (25 or 56%) were checked by the respondents, also. Additional uses were varied including electronic mail, accessing commercial data bases, computer assisted design/computer assisted manufacturing, computerized numerical control, guidance, state contest data, inservice training, occupational information, farm records management, and enrollment trends.

The respondents (35 or 78%) estimated that less than 50 percent of their teachers were using microcomputers. Only six (13%) reported that more than 50 percent of their teachers were using microcomputers.

The state's involvement in the use of microcomputers was considered to be average by most of the respondents (25 or 56%.) Only four (4%) evaluated their state's participation as optimal while 11 (24%) rated it as minimal.

Nearly every state or territory has made an effort to provide some information on microcomputers to its vocational educators. The sessions lasted from one-half hour to 60 clock hours, and were held on the local, district, regional, and state levels. Frequently "hands on" experiences were a part of the training. Sessions were offered for state staff members as well as local teachers in specific subject matter areas.

The survey of vocational educators revealed a lot of interest in computer literacy. Nearly all respondents requested a

copy of the results. More importantly, most states have made a commitment and provided financial support and inservice training.

APPENDIX

A-1. Computer Literacy for Vocational Educators
Home Economics 591B-01, 415B-01
Summer, 1983

OBJECTIVES:

Upon completion of this course the student will
1. have an appreciation for and knowledge of ways the microcomputer can be used in the home, the classroom, and in business.
2. have overcome fear and frustration and be able to use the computer with confidence.
3. be able to use the computer to perform work to ease his/her workload or make his/her life more pleasant.
4. be knowledgeable concerning computer terminology and operation.
5. be able to identify software to perform needed tasks.
6. have some guidelines for use in selection of hardware and software.

June 13	Introduction, Course Requirements Use & Care, Basic Operations Terminology
June 14	Word Processing: SUPER SCRIPSIT
June 15	Word Processing Spelling Check: SCRIPSIT DICTIONARY
June 16	Word Processing Telecommunications: THE SOURCE
June 20	TEST BANK Calculation Programs: VISICALC
June 21	Calculations
June 22	File Management Programs: PROFILE III PLUS Inventories, Mailing Lists
June 23	File Management
June 27-30	Basic Programming (Dr. Paul Ohme)
July 1	Breakfast together; Student Demonstrations; Exam

Dr. Ann Kapp
Filhiol 105
Telephone: 342-2155
343-3759

A-2. COMPUTER LITERACY FOR VOCATIONAL EDUCATORS
Home Economics 591B, 415B
Summer, 1983

GRADE PROVISIONS:

I. For a C (380 points from a possible 400 points)

1. Attendance and participation in all classroom sessions .....Mandatory
2. Individual computer use outside of class time (minimum 25 hours), record done in SCRIPSIT.....Mandatory
3. A business letter done with SCRIPSIT..... 100
4. A minimum average of 70 on the quizes and exams 100
5. A workable simple program for school or home to be demonstrated on July 1..... 100
6. An annotated bibliography of computer articles related to computer literacy, done in SCRIPSIT..... 100
7. A list of available software that would be of value to you on your job..... 100

II. For a B, all the requirements for a C with an 85 average on quizes and exams and two of the following projects. (Minimum 580 points of 600 possible points)

III. For an A, all the requirements for a C with a 95 average on quizes and exams and four of the following projects. (Minimum 780 points of 800 possible points)

8. Demonstration of a commercial program that you learn to use on your own 100
9. Prepare a multiple page paper with SCRIPSIT, using a cover page, page numbers and hyphenation. Check with the DICTIONARY 100
10. Plan and prepare a suitable VISICALC application for the home or job 100
11. Type in and debug a program suitable for the home or job and demonstrate it on July 1 100
12. Prepare a test using TEST BANK 100
13. Set up a workable home or job application using PROFILE III PLUS 100
14. Increase your typing speed by 30 wpm with TYPING TUTOR. Record an accurate record with SCRIPSIT 100
15. Plan and prepare a suitable application for merging SCRIPSIT and either PROFILE III PLUS or VISICALC 100
16. Go through the training program provided with VISICALC 100
17. Go through the training tapes and programs with SUPER SCRIPSIT 100

ALL WORK IS DUE NO LATER THAN TUESDAY, JULY 5, AT 12 NOON.

B. VOCATIONAL EDUCATION PARTICIPANTS
COMPUTER LITERACY DEVELOPMENT

AGRICULTURE
William Fletcher
Ogden High School
Winnsboro, LA 71295

BUSINESS EDUCATION
Dorothy Akins
Oberlin High School
Oberlin, LA 70655

Betty Byargeon
Fort Necessity High
Fort Necessity, LA 71243

Jean Mitchell
Franklin Academy
Winnsboro, LA 71295

Katherine Ryan
Central High School
Jonesville, LA 71343

Sue Taylor
Wossman High School
Monroe, LA 71202

TRADE & INDUSTRIAL EDUCATION
Phyllis Williams
Department of Education
Baton Rouge, LA 70804

HOME ECONOMICS
Genevieve Bourgeois
Lafayette High School
Lafayette, LA

Linda Clement
Slidell Jr. High School
Slidell, LA 70458

Billie Creed
Carroll High School
Monroe, LA 71202

Ina Daniels
Richwood High School
Monroe, LA 71202

HOME ECONOMICS
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Quitman High School
Quitman, LA 71268

Rhonda Davis
Carroll High School
Monroe, LA 71202

Tricia Elliott
Department of Education
Baton Rouge, LA 70804

LaNese Hall
Rayville High School
Rayville, LA 71269

Dorothy Johnson
Neville High School
Monroe, LA 71201

Carol McDougald
Olla High School
Olla, LA 71465

Clara Moore
Lake Providence High
Lake Providence, LA

Martha Rawls
Crowville High
P. O. Box 128
Crowville, LA 71230

Norma Taylor
Caddo Career Center
5950 Union Street
Shreveport, LA 71108

Terri Westbrook
Marian High School
Marian, LA 71260

C. SURVEY OF WORKSHOP PARTICIPANTS
COMPUTER LITERACY WORKSHOP
NORTHEAST LOUISIANA UNIVERSITY
SUMMER 1983

Directions: Put an X in the blank that best describes your present experiences, attitudes, and knowledge about microcomputers. You will not be identified as an individual, so please be honest about your responses.

1. In what area of vocational education are you employed?
___ A. Agriculture
___ B. Business
___ C. Counseling & Guidance
___ D. Trades & Industry
___ E. Distributive Education
___ F. Health Occupations
___ G. Home Economics
___ H. Other (please specify) _____

2. Are you planning to request a microcomputer for the school in which you are employed?
___ A. Yes
___ B. No
If so, specify brand name(s) _____

3. Do you plan to buy a microcomputer for your personal use?
___ A. Yes
___ B. No
If so, specify the brand name(s) _____

4. For what purposes do you plan to use a microcomputer? If you check more than one response, rank your reasons with a 1 by the most significant, a 2 by the next imporant, a 3 by the next important reason, etc.
___ A. Teaching
___ B. Record Keeping
___ C. Vocational Records
___ D. Budgeting
___ E. Other (please specify) _____
___ F. Budgeting
___ G. Inventory
___ H. Word Processing
___ I. Games

5. In the future, how do you plan to learn more about microcomputers?
___ A. Read professional literature.
___ B. Take additional courses:
__ 1) During the regular semester on a weekly basis.
__ 2) As a weekend course.
__ 3) As a Continuing Education course on a one-day basis.
__ 4) As a three week summer workshop.
___ C. With "hands on" experience using the microcomputer.
___ D. Other (please specify) _____

6. Would you encourage others to learn more about a microcomputer?
___ A. Yes ___ B. No

7. What kinds of instruction do you recommend for teaching others about microcomputers?
___ A. College Course ___ D. Inservice Faculty Meeting
___ B. In-Store Training ___ E. On Your Own Instruction
___ C. Other (please specify) ___ F. Continuing Educ. Workshop
_____

8. Which of the following statements best describe your feelings about microcomputers?
___ A. I have heard of computers, but they are too big and complex for me to understand.
___ B. I am afraid of microcomputers.
___ C. I believe that you have to have a good math background to use a computer.
___ D. I have never really thought much about computers.
___ E. To my knowledge, I do not use any services that are related to the computer.
___ F. I think of the computer as a piece of equipment that often makes errors in my bill.
___ G. In my opinion, a computer is a piece of equipment that can work for me and make my life easier.
___ H. I have strong feelings against computers, because they replace people on the job.
___ I. I know what people are talking about when they mention __mainframes, __minicomputers, and __microcomputers.
___ J. While I don't know much about computers, I realize that I must learn about them in order to be prepared for the future.
___ K. I enjoy using the microcomputer and I feel as if I will continue to use it.

9. Rank the following problems as you identify them to be associated with microcomputers by putting an X in the appropriate column.

NO PROBLEM	SOMEWHAT OF A PROBLEM	MAJOR PROBLEM	I S S U E S
_____	_____	_____	1. Capital costs
_____	_____	_____	2. Operating costs (maintenance)
_____	_____	_____	3. Lack of interest
_____	_____	_____	4. Threat to job security
_____	_____	_____	5. Lack of training on my part
_____	_____	_____	6. Lack of time to learn or use
_____	_____	_____	7. Inappropriate for my curriculum area
_____	_____	_____	8. Lack of student interest
_____	_____	_____	9. Vandalism or theft
_____	_____	_____	10. Too much game playing
_____	_____	_____	11. Loss of direction by students
_____	_____	_____	12. Downtime
_____	_____	_____	13. Rapid obsolescence of equipment
_____	_____	_____	14. Incompatibility with other systems
_____	_____	_____	15. Lack of software for my subject area
_____	_____	_____	16. Lack of funds to purchase software
_____	_____	_____	17. Lack of expertise to debug commercially produced software
_____	_____	_____	18. Lack of expertise to create software for my use at school or home.

* *

D. BASIC OPERATING INSTRUCTIONS

IMPORTANT RULES! Turn the system on before placing a disk in the disk drive and remove the disk before turning the system off.

Hold the disk by the label end only being careful not to touch the unprotected areas.

Smoke, dust, and fingerprints are all harmful to the disks. They can cause loss of data. Be careful to prevent loss.

Mark on the label of the disk with a felt tip pen. Better yet, write on an extra label, then stick it on disk.

STEPS FOR STARTING A DISK OPERATED SYSTEM:

1. Turn on switch under right front edge.
2. When light on 0 drive goes off, open door and put in operating system disk. Close door.
3. Boot system. (Push the orange button.)
4. Supply date as requested in format shown.
5. Hit <ENTER> when time requested.
6. When TRSDOS Ready and the cursor appears, the system is ready for you to begin.

TO GO TO BASIC:

1. After TRSDOS Ready appears, type BASIC.
2. Hit <ENTER> in answer to, How many files?
3. Hit <ENTER> in answer to, Memory size?
4. The display will tell you that you are in Disc Basic at this point, and you will have the cursor.

TO RETURN TO TRSDOS FROM BASIC:

Type CMD"S" or boot the system.

IMPORTANT INFORMATION TO REMEMBER:

A disk operated system must always use an operating system disk in the 0 drive. That means that formatted disks can only be used in Drives 1, 2, or 3, never in 0.

TO KILL A FILE:

1. In TRSDOS, type KILL (name)
2. Screen will say "Killing (name)
3. Screen will say "TRSDOS Ready"

TO LOOK AT THE DIRECTORY:

From TRSDOS

1. Type DIR <ENTER) for 0 Drive.
2. Type DIR :1 <ENTER> for the #1 Drive. The space between the R and the colon is absolutely necessary.

From Basic

1. Type CMD"D:0" for 0 Drive.
2. Type CMD"D:1" for #1 Drive.

TO SAVE IN BASIC:
Type SAVE"(name) <ENTER>

TO LOAD IN BASIC:
Type LOAD"(name) <ENTER>

TO PRINT WHAT IS ON THE SCREEN:
Hold down <SHIFT> and the down arrow and hit <*>.

IN BASIC TO LIST PROGRAM ON SCREEN, type LIST.
TO LIST PROGRAM ON PRINTER, type LLIST.

IN BASIC TO EXECUTE PROGRAM, type RUN.
For program to execute on display, program lines must say PRINT.
To execute on printer, program lines must say LPRINT.

E. COMPUTER TERMINOLOGY

ADDRESS: A way of identifying any location in the memory of the computer.

APPLICATION PROGRAM: Software designed for a specific purpose (such as inventory, mailing list, etc.).

ASCII: The American Standard Code for Information Interchange. The most generally used format for representing and exchanging textual information among computers.

ASSEMBLY LANGUAGE: A means of communicating with a computer at a low level. (Between high-level language like Basic and machine language, the 1's and 0's that the computer understands.)

BACKUP: An extra copy of software, normally kept on file in case the original is damaged or lost.

BASIC: Beginner's All-purpose Symbolic Instruction Code. The most used high-level language for small computers.

BAUD: A measure of speed at which data travels between computers or computer and peripheral.

BINARY: A numbering system that uses only 1's and 0's and is used by computers to store information.

BIT: A binary digit (1 or 0).

BOOT: To use a piece of software, the bootstrap, which is usually stored permanently in memory, to activate other pieces of software in order to bring the computer from "off" into readiness for use.

BREAK: An interruption of a transmission. The BREAK key tells the computer to stop what it's doing and wait for further instructions.

BUFFER: An area in the computer's memory used to temporarily store information.

BYTE: A sequence of eight bits that represents a single character.

CAI: Computer-Aided Instruction which involves a two-way "conversation" between the student and the computer.

CHARACTER: A single letter, number, or other symbol represented by one byte (8 bits).

CHIP: A generic term for an integrated circuit, a single package holding hundreds or thousands of microscopic electronic components.

COMMAND: A word or character that causes a computer to do something.

COMPILER: A piece of software that takes a series of commands written in a high-level language and translates them into a lower-level language more efficient for computer use.

COMPUTER NETWORK: Two or more connected computers that have the ability to exchange information.

COMPUTER PROGRAM: A series of commands, instructions, or statements put together in a way that tells a computer to do a specific thing or series of things.

CP/M: Control Program for Microprocessors. One of the oldest and most popular operating systems for micro-computers.

CPU: Central Processing Unit. The heart of the computer that controls all operations of all parts of the computer and does actual computations.

CRT: Cathode-ray tube. A TV-like display used with micros.

CURSOR: A position indicator on a CRT, usually a flashing rectangle.

DATA: A general term meaning any and all information, facts, numbers, letters, symbols, etc. that can be acted on by a computer.

DATA BASE: A collection of related data that can be retrieved by a computer (such as a mailing list).

DEBUG: To go through a program to remove mistakes.

DISK: A round piece of magnetic-coated material used to store data with greater density, speed, and reliabilty than a cassette.

DISKETTE: Same as disk.

DISPLAY: A method of representing information in visible form. The most common forms for micros are the CRTs and printed paper.

DOCUMENTATION: (1) The instruction manual for a piece of hardware or software. (2) The process of gathering information while writing a computer program so that others using the program are able to see what was done.

DOWNTIME: Any period when the computer is not available or not working.

DUMP: To copy all information available from one form of storage to another.

EDIT: To modify or add data to an existing document or program.

EXECUTE: To carry out an instruction or series of instructions.

FLOPPY DISK: A disk storage device made from a thin, circular piece of magnetic material, usually 5 1/4 inch or 8 inch for a micro.

FLOWCHART: A common method of graphically planning what a piece of software should do before the actual writing process begins, or for describing what it does after it is written.

FORTRAN: FORmula TRANslation. A high-level computer language used primarily for mathematical computations.

GARBAGE: Meaningless information.

GRAPHICS: Pictorial information in two dimensions.

HARD COPY: A printout of information produced by the computer.

HARDWARE: The physical part of the computer (such as the CRT, CPU, memory).

HIGH-LEVEL LANGUAGE: A method of programming that allows a person to give instructions to a computer in a form using letters, symbols, or English-like text, rather than in the 1's and 0's that the computer understands.

IMPACT PRINTER: A printer that produces hard copy by physically striking a ribbon and paper.

INPUT: The transfer of data into the computer.

INSTRUCTION: A command to the computer telling it to do a specific thing.

INTERACTIVE: Describes a computer system where a two-way conversation goes on between the user and the computer.

INTERFACE: A piece of hardware or software used to connect two devices that cannot be hooked together directly.

INTERPRETER: A computer program which translates a single line of a high level language at a time for the computer.

K: Symbol for 1000 but in computer language 1024 bytes of memory since information is stored in multiples of 8 bits (1 byte).

LOAD: To put data and/or programs into a computer.

LOCATION: A single specific place within computer memory where a piece of data is stored.

MACHINE-LANGUAGE: The "native language" of the computer.

MEMORY: Circuitry and devices that hold the binary 1's and 0's the computer can access.

MICROPROCESSOR: The central processing unit of a computer that holds all the elements for manipulating data and performing arithmetical calculations.

MODEM: An electronic device that allows computer equipment to send and receive information through telephone lines.

NETWORK: An interconnected system of computers and/or terminals.

OPERATING SYSTEM: Software that oversees the overall operation of a computer system (like TRSDOS).

PASCAL: A high-level programming language.

PERIPHERALS: Hardware that is external to the computer itself, such as printers, cassette-tape recorders.

PRINTER: An output device that produces hard copy.

PRINTOUT: Hard copy produced by a printer.

PROGRAM: (1) A set of instructions that tells a computer to do something. (2) To prepare the set of instructions.

RAM: Random-access memory. The main type of memory used in a microcomputer. Also known as read/write memory because data can be easily changed.

ROM: Read-only memory. Memory where information is permanently stored and cannot be altered.

SOFTWARE: Programs or segments of programs.

SYSTEM: An organized collection of hardware and software that works together.

TELECOMMUNICATION: Transmission of data between a computer and another computer or terminal in a different location; done with phone lines, satellites, radio waves, etc.

TERMINAL: A piece of equipment with a keyboard for input, and an output device such as a CRT or a printer, used to communicate with the computer.

TIMESHARING: A process whereby the facilities of a single computer are shared by a number of users.

WORD PROCESSING: The entry, manipulation, editing, and storage of text used in a computer.

F. SOFTWARE

F-1. APPLE COMPUTER SOFTWARE

TITLE AREA	COMPANY ADDRESS	CITY STATE, ZIP
Advertising Techniques Consumer Ed	Micro Power and Light 12820 Hillcrest, Ste. 224	Dallas TX 75230
Apple Writer Word Processing	Apparant, Inc. 4401 S. Tamarac Parkway	Denver CO 80237
Budgeting Consumer Ed	Career Aids, Inc. 8950 Lurline, Dept. S78	Chatsworth CA 91311
Career Exploration Careers	Career Aids, Inc. 8950 Lurline, Dept. S78	Chatsworth CA 91311
Comparative Buying Consumer Ed	Micro Computer Education 157 S. Kalamazoo Mall 250	Kalamazoo MI 49002
Eat Smart Nutrition	Pillsbury Co., Cons/PubRel 3286 Pillsbury Center	Minneapolis MN 55402
Electronics Engineer Assistant Grading System Program Administration	Career Aids, Inc. 8950 Lurline Avenue	Chatsworth CA 91311
Home Safe Home Safety	MCE 157 S. Kalamazoo Mall 250	Kalamazoo MI 49002
Income Meets Expenses Consumer Ed	Micro Computer Education 157 S. Kalamazoo Mall 250	Kalamazoo MI 49002
Job Readiness Careers	Career Aids, Inc. 8950 Lurline, Dept. S78	Chatsworth CA 91311
Job Readiness-Assessment Careers	Micro Computer Education 157 S. Kalamazoo Mall 250	Kalamazoo MI 49002
Know Yourself Personal Development	Creative Computing P.O. Box 789-M	Morristown NJ 07960
Loan Analysis Consumer Ed	Business Software Div. P.O. Box 1708, Dept. C	Greenville TX 75401
Magic Spells Reading	Apple Computer, Inc. 20525 Mariani Avenue	Cupertino CA 95014

Micro Mother Goose Children	Software Productions, Inc. 2357 Southway Drive	Columbus OH 43221
Money Decisions Consumer Ed	Microline P.O. Box 498	Bethlehem PA 18016
Money Management Consumer Ed	Micro Computer Education 157 S. Kalamazoo Mall 250	Kalamazoo MI 49002
Money Management Assessment Consumer Ed	Career Aids, Inc. 8950 Lurline, Dept. S78	Chatsworth CA 91311
Money Minder Consumer Ed	Harmonycs P.O. Box 1573	Salt Lake City UT 84109
Multiploy Math Skills	Reston Publishing Co. 11480 Sunset Hills Road	Reston VA 22090
Poison Proof Your Home Safety	MCE 157 S. Kalamazoo Mall 250	Kalamazoo MI 49002
Reproduction Sex Education	Micro Power and Light 12820 Hillcrest, Ste. 224	Dallas TX 75230
Solar Energy for the Home Energy	Instant Software 11223 S. Hindry Avenue	Los Angeles CA 90045
Speed Reader Reading	Apple Computer, Inc. 20525 Mariani Avenue	Cupertino CA 95014
Spell Rite Word Processing	Eigen Systems P.O. Box 180006	Austin TX 78718
Vocabulary Builder Language Skills	Instant Software Elm Street	Peterborough NH 03458
Who Am I? Values	Career Aids, Inc. 8950 Lurline, Dept. S78	Chatsworth CA 91311
Wordplus Word Processing	Microline P.O. Box 498	Bethlehem PA 18016
You Can Bank On It Consumer Ed	Career Aids, Inc. 8950 Lurline, Dept. S78	Chatsworth CA 91311
You Can Bank On It Consumer Ed	Micro Computer Education 157 S. Kalamazoo Mall 250	Kalamazoo MI 49002

F-2. TRS-80 COMPUTER SOFTWARE

TITLE AREA	COMPANY ADDRESS	CITY STATE, ZIP
Accounts Payable Bookkeeping	Radio Shack One Tandy Center	Fort Worth TX 76102
Accounts Receivable Bookkeeping	Radio Shack One Tandy Center	Fort Worth TX 76102
AgriStar Agriculture	Radio Shack One Tandy Center	Fort Worth TX 76102
All Purpose Shopper Consumer Ed	Serious Personal Computing P.O. Box 7059	S. Nashua NH 03060
Alpha Pre-school	Mercer Systems, Inc. 87 Scooter Lane	Hicksville NY 11801
Alpha II Pre-school	Mercer Systems, Inc. 87 Scooter Lane	Hicksville NY 11801
Business Checkwriter Bookkeeping	Radio Shack One Tandy Center	Fort Worth TX 76102
CARD Reading	Radio Shack One Tandy Center	Fort Worth TX 76102
Career Information System Careers	Carer Aids, Inc. 8950 Lurline Avenue	Chatsworth CA 91311
Chart of Accounts Maintenance Bookkeeping	Radio Shack One Tandy Center	Fort Worth TX 76102
Checkbook II Money	Bottom Shelf, Inc. P.O. Box 49104C	Atlanta GA 30359
Checkwriter 80 Money	Radio Shack One Tandy Center	Fort Worth TX 76102
Compucal Weight	Practical Programs 1104 Aspen Drive	Toms River NY 08753
Consumer Education Consumer Ed	Career Aids, Inc. 8950 Lurline, Dept. S78	Chatsworth CA 91311
Curriculum Management Administration	Learning Tools, Inc.	Cambridge MA 02139

Dollar Sense Consumer Ed	Kensoft 2101 50th Street	Kensha WI 53140
Drought, Hail, Flood, Bugs Agriculture	Summerville Enterprises 104 Broad Street, SE	Aliceville AL 35442
Early Games for Young Children Children	Early Games Ed. Software Ste. 140-E, Shelard Plz.	Minneapolis MN 55426
Electric Webster Proofreading	Cornucopia Software P.O. Box 6111	Albany CA 94706
Electronic Breadboard Electricity	Instant Software 11223 S. Hindry Avenue	Los Angeles CA 90045
Electronics Design Calculator Electricity	Instant Software 11223 S. Hindry Avenue	Los Angeles CA 90045
Family Tree Geneology	Computer Shack 1691 Eason	Pontiac MI 48054
Farm Budget Crop Cost & Return Agriculture	Taylor Enterprises Route 1, Box 32-a-7	Jacksonville AR 72076
Farm DataBase-Income & Expense Agriculture	Duane Bristow Route 3	Albany OH 42602
Farm Weather Center Agriculture	Climate Assessment Tech. 11550 Fuqua, Suite 355	Houston TX 77034
General Ledger Bookkeeping	Radio Shack One Tandy Center	Fort Worth TX 76102
Grammatik & Proofreader Word Processing	Aspen Software Co. P.O. Box 339M	Tijeras NM 87059
Grocery Mart Nutrition	Briley Software P.O. Box 2913	Livermore CA 94550
Home Budget Consumer Ed	Computronics 50 N. Pascack Road	Spring Valley NY 10977
Income/Expense Accounts Bookkeeping	Radio Shack One Tandy Center	Fort Worth TX 76102
Inventory Bookkeeping	Radio Shack One Tandy Center	Fort Worth TX 76102
Inventory Management System Accounting	Radio Shack One Tandy Center	Fort Worth TX 76102

Lacy Writer Word Processing	Soft Sector Mkt., Inc. 6250 Middlebelt	Garden City MI 48135
Learning to Count Money Children	Mercer Systems, Inc. 87 Scooter Lane	Hicksville NY 11801
Mailing List II Accounting	Radio Shack One Tandy Center	Fort Worth TX 76102
Meal Plan Foods	Serious Personal Computing P.O. Box 7059	S. Nashua NH 03060
Micro-Pilot Authoring	Radio Shack One Tandy Center	Fort Worth TX 76102
Money Manager Money	Acron Programs 634 N. Carolina, SE	Washington DC 20003
Net Worth Statement Bookkeeping	Radio Shack One Tandy Center	Fort Worth TX 76102
Numeric Data Entry Practice Business	Radio Shack One Tandy Center	Fort Worth TX 76102
Order Entry Bookkeeping	Radio Shack One Tandy Center	Fort Worth TX 76102
Payroll Accounting	Radio Shack One Tandy Center	Fort Worth TX 76102
Personal Bill Paying Consumer Ed	Instant Software Elm Street	Peterborough NH 03458
Personal Inventory Home	Southern States Systems P.O. Box 9609	Washington DC 20016
Profile Three Plus Data Base Mgt.	Radio Shack One Tandy Center	Fort Worth TX 76102
Purchase Order Entry Bookkeeping	Radio Shack One Tandy Center	Fort Worth TX 76102
Real Estate, I, II, III, IV Business	Radio Shack One Tandy Center	Fort Worth TX 76102
Refware Thesaurus 2.0 Word Processing	David C. Whitney Assoc. Inc. P.O. Box 451	Chappaqua NY 10514
Sigma Pre-school	Mercer Systems, Inc. 87 Scooter Lane	Hicksville NY 11801

Sigma - Ex Pre-school	Mercer Systems, Inc. 87 Scooter	Hicksville NY 11801
Speed Letter Package Business	Blechman Enterprises	Canuga Park CA 91305
Spel-O Pre-school	Mercer Systems, Inc. 87 Scooter Lane	Hicksville NY 11801
The Home Accountant Money	Continental Software Co. 11223 S. Hindry Avenue	Los Angeles CA 90045
The Test Bank Administration	Advanced Technology Assoc. 3019 Government Drive	San Diego CA 92122
Time Manager Management	Radio Shack One Tandy Center	Fort Worth TX 76102
TRS-80 Author I Authoring	Radio Shack One Tandy Center	Fort Worth TX 76102
Typing Teacher Typewriting	Radio Shack One Tandy Center	Fort Worth TX 76102
Watch Your Calories Nutrition	Career Aids, Inc. 8950 Lurline, Dept. S78	Chatsworth CA 91311

F-3. IBM COMPUTER SOFTWARE

TITLE AREA	COMPANY ADDRESS	CITY STATE, ZIP
Accounts Payable Business	Discount Software Group 6520 Selma Ave., 309	Los Angeles CA 90028
Accounts Receivable Business	Discount Software Group 6520 Selma Ave., 309	Los Angeles CA 90028
Easy Filer Data Base Mgt.	Information Unlimited Soft 2401 Marinship Way	Sausalito CA 94965

F-5. OTHER COMPUTER SOFTWARE

TITLE AREA	COMPANY ADDRESS	CITY STATE, ZIP
Accounts Payable Posting Drill Business	Bob Baker Software 5845 Topp Court	Carmichael CA 95608
Alphabet, Sequencing, and Alph Business	Random House, School Div. Brandywine Rd., Suite 201	Atlanta GA 30341
Alphabetize Business	Bob Baker Software 5845 Topp Court	Carmichael CA 95608
Automated Accounting Business	South-Western Pub. Co. 5101 Madison Road	Cincinnati OH 45227
Beef Projection Agriculture	OSU, Ag. Economics Dept. 513 Ag Hall	Stillwater OK 74074
Beef Ration Agriculture	OSU, Ag. Economics Dept. 513 Ag Hall	Stillwater OK 74074
Calculator I Business Machine	Semi-Sentient Software Box 683	New York NY 10001
Capitalization Business English	Instant Software Elm Street	Peterborough NH 03452
Complete Checkbook Maintenance Bookkeeping	Radio Shack One Tandy Center	Fort Worth TX 76102
Computer SAT Review	Harcourt Brace Javonovich 1250 Sixth St. (Computer)	San Diego CA 92101
Consumer Services Basic Skills	Opportunities for Learning 8950 Lurlina, Dept. 74	Chatsworth CA 91311
Decimal Addition & Subtraction Business	Bob Baker Software 5845 Topp Court	Carmichael CA 95608
Disk Spell-Bound Business	Bob Baker Software 5845 Topp Court	Carmichael CA 95608
Disk Steno Shorthand	Bob Baker Software 5845 Topp Court	Carmichael CA 95608
Easy Planner Management	Information Unlimited	Sausalito CA 94965

Eats Foods	Nutritional Information & Research Center Pennsylvania State Univ.	University Pk. PA 16802
eduCAItor advoCAIte Authoring Authoring	eduCAItor, Inc.	Hudson MA 01749
English Achievement I Business English	Microcomputer Workshops 103 Puritan Drive	Port Chester NY 10573
English Usage Exercises II Business English	3R Software Box 3115	Jamaica NY 11431
Farm Record Agriculture	OSU Ag. Economics Dept. 513 Ag Hall	Stillwater OK 74074
Farm Records Accounting Agriculture	MicroLearning Ware P.O. Box 2134	North Mankato MN 56001
FarmWare Agriculture	MicroLearning Ware P.O. Box 2134	North Mankato MN 56001
Filing Test Business	Bob Baker Software 5845 Topp Court	Carmichael CA 95608
Filing/Business English/ Vocabulary Business	Educational Media Assoc. 342 W. Robert E. Lee	New Orleans LA 70124
Fraction Series Business	Bob Baker Software 5845 Topp Court	Carmichael CA 95608
Fractions-LCD Selections Business	Bob Baker Software 5845 Topp Court	Carmichael CA 95608
Fundamental Punctuation Pract. Business	Random House, School Div. Brandywine Rd., Ste. 201	Atlanta GA 30341
Fundamental Spelling in Context Business	Random House, School Div. Brandywine Rd., Ste 201	Atlanta GA 30341
General Accounts/Rec/Rayable Accounting	Micro Architect, Inc. 96 Dothan Street	Arlington MA 02174
Grammar for Students of English Business	Gregory F. Ludwig 910 Soo Blvd.	Rice Lake WS 54868
Gregg Personal Keyboarding Typewriting	Gregg/McGraw-Hill Book Co. 1221 Ave. of the Americas	New York NY 10020
Heating Fuel Housing	D-Soft 319 Clarendon Ave.	Southport NC 28461

Home Inventory & Valuables Home	Kevin Chieff 42 Carsam Street	Fanwood NJ 07023
Household Accountant Home	Instant Software, Inc. Dept. RS-Z	Peterborough NH 03458
I - Me: Correct Usage Business	Gregory F. Ludwig 910 Soo Blvd.	Rice Lake WS 54868
Income Tax Pac Accounting	Computronics 50 N. Pascack Road	Spring Valley NY 10977
Individual US Income Tax Taxes	Pansophics, Ltd. Whistle Stop Mall	Rockport MA 01966
Jr-Sr High Vocabulary Series Business	Microphys 2048 Ford Street	Brooklyn NY 11229
Loan Agriculture	OSU, Ag. Economics Dept. 513 Ag Hall	Stillwater OK 74074
Machine Cost Agriculture	OSU, Ag. Economics Dept. 513 Ag Hall	Stillwater OK 74074
Mail/File-Series 11 Communications	Galactic Software, Ltd. 11520 N. Port Washington	Mequon WS 53092
Microtyping Typewriting	Hayden Book Co. 50 Essex Street	Rochelle Park NJ 07662
Miz' Spell Business English	Programs Unlimited Box 265, Dept. 881M	Jericho NY 11753
Money Maestro (Home Banking) Money	INNO Sys 2150 Shattuck Ave., 901	Berkeley CA 94704
Mostly BASIC for the Home Home	Advanced Operating System 450 St. John Road	Michigan IN 46360
Nutri-Pack Nutrition	Micro-Comp, Inc. 2015 NW Circle Blvd.	Corvallis OR 97330
Nutrition Nutrition	Career Aids, Inc. 8950 Lurline, Dept S78	Chatsworth CA 91311
Personal Money Series Basic Skills	Opportunities for Learning 8950 Lurline, Dept. 74	Chatsworth CA 91311
Prefix Study and Quiz Business	Basics and Beyond Box 10	Amawalk NY 10501

Understand Yourself Self Improvement	Huntington Computers P.O. Box 787	Corcoran CA 93212
Video Speed Reading Reading	Instant Software 2153 Leah Lane	Reynoldsburg OH 43068
Vitafact Series Home	Personal Software, Inc. 1330 Bordeaux Drive	Sunnyvale CA 94086
Vocabulary Series Business	Micro-Ed P.O. Box 24156	Minneapolis MN 55425
Weight Control & Nutrition Nutrition	Texas Instruments P.O. Box 01508	Lubbock TX 79408
What's in Your Lunch Nutrition	Lowrence Hall of Science University of California	Berkeley CA 94720
Who-Whom: How to Use the Terms Business	Gregory F. Ludwig 910 Soo Blvd.	Rice Lake WS 54868
Word Blasting Business	Random House, School Div. Brandywine Road, Ste. 201	Atlanta GA 30341
Word Power Business	The Teaching Assistant 22 Seward Drive	Huntington Sta NY 11746
Word-Pak Business	Edu-Ware East P.O. Box 336	Maynard MD 01754
Work Series Basic Skills	Opportunities for Learning 8950 Lurline, Dept. 74	Chatsworth CA 91311

G. BIBLIOGRAPHY

G-1. CHILDREN AND COMPUTERS

Albino, Victor T. "Billy and the Electric Troll." 80 Micro, No. 40 (May 1983), pp. 320-322.
The repetitious drills of yesterday are being replaced with the concept of simple practice games with the computer. Programs are included in this article as learning tasks for young children, reinforcement, review, and fun for older children.

Ault, Rosalie. "Putting the Kids in Control." Classroom Computer News, Vol. 3, No. 2 (Nov./Dec. 1982).
The author advocates putting the child in control of the computer rather than the computer in control of the child. This is done by having them acquire skills. It is important for students to acquire programming skills in elementary school because few girls will participate if their experiences are delayed until high school.

Carlson, Edward H. "Teach Your Kids Programming." Creative Computing, Vol. 9, No. 4 (April 1983), pp. 168-176.
One should adjust teaching methods and goals to the developmental age of the child. A breakdown was given as to appropriate ages to attempt certain tasks based upon Piaget's theory. It pointed out methods of teaching programming to children.

Cohen, Carolyn. "The Kid, the Apple, and Me." Popular Computing, Vol. 1, No. 3 (January 1982), pp. 78-79.
Funny article about a child's knowledge of computers and the mother's puzzlement and amazement. Entertainment only.

Favaro, Peter. "My Five Year Old Knows Basic." Creative Computing, Vol. 9, No. 4 (April 1983), p. 158.
Children should not be pushed into programming of computers too fast; they need the readiness for it. Piaget's theories were incorporated into the article.

Seelig, Anita. "Home, Hearth, and Computing." Personal Computing, Vol VI, No. 9, (September 1982), pp. 140-144.
Children adapt with ease to personal computers. A child can learn about sophisticated concepts early in life without a great deal of prodding; he can play games that expand his knowledge and are also enjoyable; and he acquires knowledge of computing that he will surely need when he joins the work force 10 to 15 years from now.

Shapiro, Leonard. "What Are Children Learning from Video Games?" Popular Computing, Vol. 2, No. 4 (February 1983), pp. 121-124.

Pros and cons of video games are stated. It seems the advantages exceed the criticisms. We need to research the factors that make video games attractive and use the findings to enhance their educational value.

Snyder, Stephanie. "Kid Tested: Radio Shack Tutors are A-OK." Rainbow, (June 1983) pp. 162.

A review of two Radio Shack Word Tutors. A good discussion from an educator's point of view as well as an evaluation from the children who used them.

The', Lee. "Educational Software for the Home." Personal Computing, Vol. VI, No. 6 (June 1982), pp. 48-52, 102-3; 106-110, 114.

This article approaches the question of what parents can do in the home to help their children by resolving the following sequence of questions: Can computers really help kids learn? If they do, what kinds of educational software are there? How can parents find this software they are thinking of buying?

Watt, Daniel. "Should Children Be Computer Programmers?" Popular Computing, Vol. 1, No. 11 (September 1982), pp. 130-133.

Gives advantages of having children learn from programming computers. Answers some of the misconceptions regarding children and computers. Very helpful article for teachers and parents.

G-2. COMPUTER LITERACY

Anderson, Ronald, Daniel Klassen and David Johnson. "Why We Need to View Computer Literacy Comprehensively." The Education Digest, Vol. XLVII, No. 7 (March 1982).

This article emphasizes how important it is for students to become familiar with computer literacy since it is a skill that every person needs to know. The article lists what should be included in the general education curriculum for students to learn to operate and to know how computers can be used productively.

Birmingham, Jason. "Back to Basic, Forward to Computing." Personal Computing, (March 1982) pp. 23-24.

Some educators now believe that computer literacy must be introduced to grammar-school children along with the three "R's." Using students who have become adept with the computer to teach other students has become a successful method of teaching its use. A major problem in the addition of computer classes of this type has been a lack of understanding from other teachers who do not know enough about computers and therefore feel threatened by them. An answer to this problem has been to offer computer classes for teachers. A very logical idea and an interesting article.

Carroll, Jane. "Computing Literacy: Springboard to Success." Personal Computer, Vol. 6, No. 9 (September 1982), pp. 45-48.

Cites examples of computer knowledge having provided young executives with promotional advantages over those who fear computers and lack computer knowledge.

Favaro, Peter. "My Five Year Old Knows Basic." Creative Computing, Vol. IX, No. 4, pp. 158-166.

This article discusses a developmental framework for children's cognitive and behavorial competencies aimed at helping parents and teachers understand what children are capable of learning about and on computers, and at what ages or stages of development.

Frederic, Franz J. "Inside Microcomputers." Today's Education, Vol. 71, No. 2 (April-May, 1982), pp. 17-19.

Frederic gives a brief description of the sizes and the different components of computers, a list of computer terminology and its parts, an explanation of computer language, and computer use to aid one in understanding what it is like to use a computer. He also gives the basic components common to all computers.

Gabel, David. "What About the Rest of the People?" Personal Computer, Vol. 6, No. 9 (September 1982), pp. 40-41.

Presents theory that as economy recovers, people familiar with computers will get the better jobs, while those who are afraid of the machine will be relegated to menial tasks. Educating youth for computer literacy may be the answer.

Heller, Rachelle S. and Dianne C. Martin. Bits 'n Bytes About Computing: A Computer Literacy Primer, Rockville, MD: Computer Science Press, 1983.

This book was written for the classroom teacher to serve as a source and perhaps as a textbook. It covers a broad range of topics: what is computer literacy, where did computers come from, how do computers work, what computers can do for us, and how computers will affect our lives. The book contains a list of activities and related readings.

Kellam, Paul. "What to Compute? That Is the Question." Personal Computer, Vol. 6, No. 12, (December 1982) pp. 5-6, 8.

Unemployment can be reduced and the Industrial Revoluation replaced by the Cognitive Revolution if the masses learn to compute. The United States must become an information-producing country rather than a goods-producing one.

McClain, Ellen Joffe. "Do Women Resist Computers?" Popular Computing, Vol. II, No. 3, (January 1983) pp. 66-78.

Women are helping to topple 25-year-old barriers and are being welcomed on equal terms into the computer field.

Miller, Linda. "Get Up and Running with Your TRS-80." TRS-80 MicroComputer News, Volume I, Issue 1 (January 1983), pp. 7-11.

The topic is where do I begin? Also included is the software, types of systems, printers, and miscellaneous supplies needed for a computer.

Seelig, Anita. "Home Health and Computing." Personal Computing, Vol. 6, No. 9 (September 1982), pp. 140-142, 144.

Presents a variety of alternatives used by parents to help teach children about computers.

The', Lee. "Squaring Off Over Computer Literacy." Personal Computer, Vol. 6, No. 9 (September 1982), pp. 58-60, 62, 64, 69-70, 72

A valid argument for teaching computing literacy rather than computer programming is presented. Emphasizes need for schools to provide hands on

experiences in three main stages using computers (1) as machines, (2) as tools, and (3) as creative instruments.

Wood, Merle. "Computer Literacy." The Balance Sheet, Vol. 64, No. 4, (March/April 1983) pp. 231-233.
Tells why computer literacy is a necessary foundation for all students in preparing for the future. The author gives a one course outline that might be followed in an introductory computer literacy course. It is necessary if today's students are to understand more complex computer material in the future.

Wrege, Rachel. "High (Tech) Anxiety." Popular Computing, Vol. 1, No. 3, (January 1982) pp. 43-52.
Many persons have experienced "cyberphobia" because of computers, and many employees distrust computer accuracy. Some people are solving the problem themselves. Feeling the pinch of computer ignorance in their jobs, many professionals are going back to school to learn about computer literacy.

G-3. COMPUTER USE AND CARE

Allen, J. A. "When the Goal Is to Find the Best Solution." Personal Computing, Vol. VII, No. 1, (January, 1983), pp. 69-78.

Explains the use of the personal computer to solve on-the-job problems. Shows how studies may be conducted, programmed, and solutions sought in a minimal amount of time as compared with doing it manually. Encourages one to do his own investigation and gives procedures one might follow.

Bell, Trudy E. "Learning to Win." Personal Computing, Vol. VII, No. 4, (April 1983), pp. 134-141.

Account of installing personal computers in prisons, halfway houses, and ghetto community centers. Through game-format programs, the computer advantage is giving the disadvantaged job skills and self-esteem. Personal computers have given many of these people a new lease on life--a feeling of hope and focus--a feeling that they belong to this technological age.

Block, Lawrence. "Program Your Home Against Burglars." Creative Computing, (May 1983) pp. 146-150.

Since the burglary rate is climbing even faster than the sales of computers, the writer explains how to protect valuables, including the expensive home computer. Don't advertise that an expensive computer is owned, cover it with a cloth on leaving the house, and finally, contact the local police for an etching tool for marking it. The police will provide a window sticker announcing that you are participating in Operation Identification, one of the most effective deterrents to computer theft.

Coan, James S. "Math for Older Students." Creative Computing, Vol. 8, No. 10, (October 1982), pp. 14-16.

A collection of three diskettes containing 12 interactive lessons, games, and exercises. Each lesson is designed to accommodate a wide range of skills within topic being presented.

Diaz, Miguel. "Family Medical History." 80 Micro, (Nov. 1982), pp. 90-91.

Contains a listing of a program that keeps a family medical history. This program keeps records, and through its record-tracing capabilities, shows tendencies and variations on incidences of illness. There are five data-entry options: vaccination data, visits to the pediatrician, hospitalization, home-stay illness, and ambulance services.

Dischert, Dane and Dan Keen. "Ribbon Rewind." 80 Micro, (Anniversary 1983) pp. 586-587.
This article tells of a money-saving method of reusing the Daisy Wheel cartridges by rewinding one-shot printer ribbon using a small screw driver and common sense.

Ditlea, Steve. "Backup and Security." Popular Computing, Vol. 1, No. 9, (July 1982), pp. 38, 42, 44, 46.
This article presents suggestions for saving data from disaster and protecting sensitive information. Advocates the use of hard disk with data transferred to separate magnetic tape.

Gabel, David. "Can You Take a Catastrophe?" Personal Computing, Vol. 7, No. 2, (February 1983), pp. 78-81, 83, 85-86.
Damage to the computer is divided into two categories: annoying damage (dirt, tobacco smoke, fingerprint oils, a foreign object, wear, static, power surges, etc.) and catastrophic damage (fires, floods, earthquakes, etc.) Both categories of damages are explained in detail, and suggestions are given as to solutions for each situation.

Gabel, David. "How a Computer Can Control Your Home." Personal Computing, Vol. 7, No. 3, (March 1983), pp. 56-62.
An advanced how-to project in developing a smart house. Home security, remote control lighting, controlled watering of plants and lawns with proper water control are a few of the innovative processes a computer can help accomplish.

Grimes, Dave. "Avoid the Dangers of Dirty Disks." 80 Micro, Special Issue (1983), pp. 238-239.
Clean disks are a necessity, but cleaning disks can be complicated. Grimes gives a CLEANER/BAS step-by-step program to follow for users to control disk head cleaning efforts and to keep a disk system clean.

Gunn, David. "A Night on the Town." 80 Micro, No. 28, (April 1982), pp. 124, 126.
A computer is like a friend: it requires some courtesy. Two important courtesies for the computer discussed were (1) taking the computer out--giving it some new work to do other than the day-to-day problems, (2) keeping it clean and making minor maintenance repairs. If these points are followed, the computer will respond to commands more quickly and compute more accurately.

Hager, Tom. "Micros in the Lab." 80 Micro, (November 1982), pp. 174-181.

The microcomputer is not used very often in the scientific exploration, but some scientists are interfacing micros with their research equipment.

Keller, Wynne. "The Data Base Explained." 80 Micro, Special Anniversary Issue (1983), pp. 32-38.
Explains the advantages and disadvantages of the two types of data-base managers. Defines important DBM terms. Discusses the importance of capacity and speed in selecting a DBM. Lists some features to look for when designing reports. Gives some guidelines to assist one in putting a DBM to use.

Kepner, Terry. Radio Shack Repairs." 80 Micro, (October 1982), pp. 101-102.
The repairs that would be made on your TRS-80 and the charges made by Radio Shack were discussed in this article. Radio Shack reserves the right to repair or refuse to repair TRS-80 equipment that has had any add-on work, other than that done by Radio Shack.

Kuhn, David G. "To Catch a Thief." 80 Micro, No. 28 (April 1982), pp. 274-276.
Computers are very helpful and useful in keeping up with a complete inventory of your household possessions in case of theft or fire. The computer can quickly and accurately supply all needed information to the police or insurance company. This article explains how this is done.

Latamore, G. Barton. "A Fluid Well for Your Words." Personal Computing, VII, No. 4 (January 1983), pp. 106-110.
Author relates how a writer used the word processor to write his newspaper articles and books. Gives an account of how the word processor unleashed his creative talents. The word processor made it much easier and faster to change and edit copy.

Lawrence, Georgia A. "How to Beat a Bad Memory." Personal Computing, Vol. VII, No. 3 (March 1983), pp. 83-85.
Shows how one woman used the Apple II Plus to eliminate lists. Makes suggestions for compiling various lists for household inventories, groceries, sewing, etc. Discusses how the computer can be used for the small details such as menu planning for a small or a large party.

McClain, Larry. "Servicing Your System: Be Prepared." Personal Computer, Vol, 6, No. 9 (September 1982), pp. 50-55, 148-150, 153, 154.
Presents several questions to consider in making the right choice for service for computers. Service

options from 24 companies, presented in chart form, compare type of service, price, and time.

Metzger, Elizabeth. "The Helping Hands of Computer Clubs." Personal Computing, Vol. VII, No. 3 (March 1983), pp. 142-147.

Emphasizes the value of computer clubs to share information and review products. Stresses the importance of getting product evaluations, based on the members' own experiences. Promotes the idea of organizing clubs for small groups with special interests and points out advantages of such an organization. Points out the opportunity members have to learn different approaches to particular problems.

Miller, Franklyn D. "Compress It." 80 Micro, (March 1983), pp. 336-340.

Compressed programs run faster and more efficiently. You can save 30 to 50 percent on memory and execution time by rewriting your programs.

Parker, Rita. "Computing Your Family Tree." Personal Computing, Vol. III, No. 1 (January 1983), pp. 112-118.

Shows how the personal computer can be used for tracing family histories. Shows how one can review, add, change, or print data. Describes software and network available for genealogical research and the cost involved. Makes suggestions on how and where to begin.

Radding, Alan. "When Your Computer Breaks Down." Popular Computing, Vol. II, No. 7, (May 1983) pp. 196-198.

Some do's and don't's in regard to care, use, and preparedness in case of breakdowns.

Robinson, Dan. "Word Processing Guide." 80 Micro, (1983) Anniversary Issue, pp. 28, 30-31.

Producing letters and manuscripts accurately and quickly has been made possible through word processing. This article explains the many functions that the word processor performs in speeding up production. It also explains how the program controls the appearance of the printed text and gives the special features of various brands of word processors. It discusses available software and compatibility with other programs and makes recommendations on hardware.

Rymer, John. "Putting a Price on Creativity." Personal Computing, Vol. VII, No. 1 (January 1983), pp. 140-145.

Author shows how one firm--using a personal computer--generated the necessary data for its business and saved money in the process. Points up the importance of using a computer system designed to meet the needs of

a business. Discusses how one company hopes to isolate and analyze accumulated information in an effort to provide management. Gives an account of the search for software that would best meet the needs.

Schwartyz, Barbara. "Data-Base Management Systems: The New Bedrock of Business." Personal Computing, Vol. VII, No. 1 (January 1983), pp. 148-158.
Stresses the value of a good data-base management system to collect related and diverse information into a central pool, to reorder that information, and to get the information in a usable form. Discusses the basic functions of data-base management. Discusses choices of filing program. Comments on the value of the data-base management system in terms of cost.

Suydom, Bill. "Time Management: Business in Its Finest Hour." Personal Computing, March 1982, pp. 34-40.
An interesting article explaining the place of computers in business in which time scheduling has been a problem and has caused loss in business and loss in revenues. With the increase in time management software production and use, businessmen are realizing that a $4000 investment in computer hardware and software can literally save their businesses and actually attract customers at the same time.

Watt, Dan. "Informal Learning." Popular Computing, Vol. 2, No. 5, (March 1983), pp. 60-64.
Recent developments in software are being geared to home learning. Examples of new software that both teaches and entertains are examined.

Zaks, Rodney. Don't (Or How to Care for Your Computer). Berkley, California: Sybex, Inc. 1981.
Gives advice on all aspects of caring for the computer. Includes chapters on the computer system, floppy disks, hard disks, the computer, the CRT, the printer, tape units, computer room, software, documentation, security and help. $11.95.

Zamberlin-Maifn, Annette. "What if it Doesn't Work?" TRS-80 MicroComputer News, Vol. I, Issue 5 (January 1983), pp. 28-30.
The dreaded error codes that can be obtained when working with TRS-80 microcomputers and how to remedy the problems were discussed. If problems cannot be solved by self-diagnosis, there are seven main support groups in the Computer Customer Service to help computer customers.

Zarley, Craig. "Learning a Language." Personal Computing, (July 1983) pp. 96-103.

A businessman's use of a computer enabled him to also prepare programs to aid his daughter in learning German, leading to a software business for himself. Learning of languages proved easier and faster when using computers--an added computer dimension!

G-4. COMPUTERS AND EDUCATION

Bell, Trudy E. "Learning to Win." Personal Computing, Vol. VII, No. 4 (Summer 1983), pp. 134-141.
This article describes an educational approach to motivating students to learn. Some standard guides for those who create educational programs for many purposes.

Bitter, Gary. "The Road to Computer Literacy." Classroom Computer News, Vol 2., No. 5, (Feb. 1983) pp. 54-60.
This article suggested that teachers of all children in grades 10-12 begin using some of the ideas in their classroom. It also gave a scope and sequence computer chart for grades kindergarten through twelfth.

Bitter, Gary. "Understanding the Potentials of Microcomputer Uses in Education." Educational Computer, Vol. 2, No. 2, March/April 1982) p. 14.
Microcomputers should be selected according to the teacher's educational software/courseware needs. Many teachers do not know the potential of the computer, yet the educational areas for software are numerous.

Bolton, Brenda Anthony. "Solving Administration Problems: Student Scheduling and Tracking System for the Microcomputer." Educational Computing, Vol. 2, No. 2, (March/April), pp. 24-26.
Description of one school's approach to computer scheduling and computer report cards. Program chosen was SSTS.

Bowen, Barbara. "Using Logo in the Classroom: The Project Approach." Teaching and Computers, Preview Issue (Spring, 1983) pp. 36-37.
Lesson plan for use of Logo on a project approach plan.

Caldwell, Robert M. "Guidelines for Developing Basic Skills and Instructional Materials for Use with Microcomputer Technology." Educational Technology, (October, 1980) pp. 7-12.
The design of instructional programs should incorporate various teaching strategies to add variety to an overall curriculum and to address cognitive processes at all levels of that domain of learning.

Calkins, Andrew. "A Day in the Life of a Computer-Using Teacher." Teaching and Computers, Preview Issue (Spring, 1983) pp. 19-22.
Pictorial tour of a computer coordinator's day at school in grades 1 - 6, and a list of the teaching objectives for the year.

Carroll, Jane. "Comp Sci 101." Popular Compuing, Vol. 1, No. 6, (April 1982) pp. 80-82, 84, 86.
College students of today are taking more beginning Computer Science classes than ever before. Some universities are considering making an introductory computer class a requirement for all students. The need for computer literacy at the college and business level is explained in detail.

Evans, Christopher. "Microcomputers in the Classroom -- An Invitation to the (Near) Future." Today's Education, Vol. 71, No. 2 (April, May 1982) pp. 11-15.
The impact of computers have made a difference in the classrooms. Teacher computers for classroom purposes are becoming very popular. The effects of having these in the classrooms, their uses, and benefits to the students were discussed. Motivation is the author's goal for each student.

Gabel, David. "What About the Rest of the People?" Personal Computing, VI, No. 9, (Sept. 1982) pp. 40-41.
Discusses problem of economic pressures of putting computer knowledge out of the reach of a segment of society. Recommends a remedy of making computers available to all schools, through federal funds.

Gabel, David. "What's in a Game?" Popular Computing, Vol. 7, No. 4, (April 1983) pp. 64-69.
An analysis of different classes of electronic games and how they can be a teaching tool.

Graziano, Louis and Carl Woloszyke. "Partnership: Computers and the School Store." The Balance Sheet, Vol. LVI, No. 4, (December, 1974/January, 1975) pp. 165-166, 188.
This article explains how students in a two-hour distributive education class set up and run a school store by using a computer. A working system for the students was shown as well as what the students learned in doing this project.

Jackson, Robert. "Teaching Where the Children Are." Teaching and Computers, Preview Issue (Spring 1983) pp. 6-7.
Use of computers throughout school programs, not just in math. Suggested uses in different subject areas.

Lawler, Robert. "Logo Ideas: Advice to a Teacher." Creative Computing, VIII, No. 11, (Nov. 1982) p. 185.
The success of the classroom computer depends on three things: the inclination of the child to connect his computer activities with what he already knows; the flexibility of computer systems to enable the building of

simple models; the knowledge and values of a teacher in shaping particular procedures through which the child's objectives are achieved in such a way that he is introduced to important ways of looking at and describing the world.

Malone, Thomas. "What Makes Computer Games Fun?" Byte, Vol. 6, No. 4, (December 1982) pp. 258-262.
With computer costs decreasing, their spread into home and classrooms appears inevitable. Games will help to increase educational application, and make learning more efficient, interesting, and more enjoyable to students.

Maloney, Eric. "School Micros: Boon or Ban?" 80 Micro, No. 35, (Dec. 1982) pp. 396, 398.
A report about why a committee was formed to decide whether or not schools should get computers when it is feared that the schools would use them just for drill and practice. Manufactures claim computer literacy is the requirement for future success and some people believe it is not.

Peelle, Evan. "Take the Trauma Out of Training." Personal Computing, Vol. VI, No. 6, (June 1982) pp. 48-52+.
A discussion of the benefits of training employees by computer: non-threatening situation, multiple level interaction, standardization, and quality of presentation. Analyzes software being designed for training, such as Bell and Howell's PASS, and MicroLab's Learning System, WICAT's WISE.

Savage, Earl R. "Education 80." 80 Micro, (August 1982) pp. 372-376.
A discussion of computer games that have a place in the learning process. Describes four useful games for students where learning is accidental and several games that are designed to instruct.

Shapiro, Leonard. "Arcades--What Are Children Learning From Video Games?" Popular Computing, Vol. II, No. 4, (February 1983) pp. 121-124.
Addresses the question by giving criticisms of video games, describing what's happening, telling what kids say and what educators say. Concludes that kids are learning to use their senses and becoming comfortable with computers. Says educators need to take factors that make arcade games addictive and use them in educational computing.

"Ten Things to Do the Day the Computer Arrives." Teaching and Computers, Preview Issue, (Spring, 1983) p. 6.
Practical ideas for effective installation of a computer in a classroom.

Wall, Elizabeth. "Microcomputers for Adult Learning." Electronic Education, Vol. 2, No. 6, (Feb. 1983) pp. 33-34.
Reviews of some of the latest materials written on computers being used for adult lerning. He cautioned administrators to look before jumping on the bandwagon.

Watt, Daniel. "Close Encounters with Software." Popular Computing, Vol. 1, No. 10, (Aug. 1982) pp. 36, 38.
Educational software was divided into three types: (1) software that uses conventional teaching methods such as drills, practice, and simple tutoring; (2) software that uses innovative teaching methods to accomplish learning--such as word processing; (3) software that uses a new medium to create learning experiences that couldn't exist without the computer--such as computer educational games. An analysis of each of these categories is given. Helps for choosing software are also given.

Watt, Dan. "Selling Micros to Schools." Popular Computing, Vol. 2, No. 4, (Feb. 1983) pp. 48-51.
With the total hardware market valued around $300 million and the software market at least $100 million per year, microcomputer companies are aggressively pursuing the school market. Apple Computer, Inc. has taken the lead with an offer to donate an Apple computer to every school in the country! (A $200 million giveaway.) The condition requested is that Congress increase tax benefits for such donations. This is being considered, and the ramifications are discussed in this article. The second-ranked contender for the educational market, Radio Shack, is also aggressively trying to influence this by support for educational support, promotion of software, training for teachers, and grants for educational purposes. Educators as well as the general public should be aware of these things.

Zander, Ben. "How Kids Taught Their Legislator." Personal Computing, (Sept. 1982) pp. 64.
A demonstration at the State Capital in California to show senators and their representatives what kids in the 16 school districts in California know about computers. Legislators passed new legislation on computer literacy in the school system in California.

G-5. GENERAL

Barden, William, Jr. "Fail-Safe Disks." Popular Computing, Vol. 1, No. 8, (June, 1982), pp. 134-140.
Article discusses some of the failures that can occur in computer system and what you can do to make the system fail-safe, more or less. The best way to make all software fail-safe is to buy it from a reliable source. Improper operating procedures can damage disk files, also.

Grout, Bill. Open Cartridge Surgery." 80 Micro (December 1982), pp. 343.
You can save money by reloading the cartridge for the daisy wheel printer with ribbon of the same size from a less expensive cartridge.

Powers, David E. "How Safe Is Your Computer." Creative Computing, Vol. VI, No. 5 (May 1980), pp. 32-40.
A thought-provoking article on the possibilities of theft, embezzlement, fraud, and other crimes by quick-witted employees or professional criminals. Several examples of successful criminal actions are cited. Suggestions are given for helping businesses to protect themselves. No permanent solutions are available.

Solomon, Les and Al Burawa. "Maximize Your Computing Comfort and Efficiency." Computers and Electronics (April 1983), pp. 35-48.
This article takes into consideration the design of the computers and work stations and the impact they have on the user.

Wiles, James P. and George Stewart. "What Happens When the Lights Go Out?" Popular Computing, Vol. I, No. 10 (Aug. 1982) pp. 97-106.
A discussion of power-related problems including voltage dips, voltage surges, voltage failures, and electrical noises, and ways of protecting desktop computers from their effects. The way to determine power requirements is explained and a "where-to-find" chart (including cost information) of power-protection devices is included. Of interest to all computer owners and users.

Wollman, Jane. "The Advance of the Intelligent Environment." Popular Computing, Vol. II, No. 2 (December 1982), pp. 98-99, 102.
In this interview with Alvin Toffler, the noted futurist advances some of his ideas about computers and their effects on society during the next 10 to 20 years. Thought-provoking article.

G-6. LEGAL ISSUES

Brothers, Hardin and Jean Robert Durbin. "Computer Security with a Credit Card." 80 Micro, No. 38, (March 1983) pp. 74-90.

Complete directions for controlling access to one's computer so that a special credit card is needed to operate it. Gives a step-by-step outline for a port-addressed device (CSCR) attached to either the keyboard or expansion port of the expansion interface--simple electronics, according to the author. Requires appropriate software for use, such as Listing 1, 2, 3, 4.

Carelli, Richard. "How Computers Are Changing The Supreme Court." Popular Computing, (April 1982) pp. 52-54.

The article describes the use of computers in the Supreme Court. Word processing now creates the bulk of the Supreme Court's paper flow memoranda, opinion drafts and final versions, speech texts, and correspondence.

Gitt, A. P. "Deducting Your Personal Computer From Your Taxes." Popular Computing, Vol. II, No. 12, (December 1982) pp. 59-64.

Any legitimate business or educational use qualifies for a tax write-off. If your computer helps you earn any income, it's part of the cost of doing business.

Immel, A. Richard. "Is Software Piracy Justified?" Popular Computing, Vol. II, No. 9, (July 1983) pp. 48-54.

This article gives convincing reasons why some business men justify software piracy.

Scarpeli, Anthony T. "How to Copyright." 80 Micro, No. 36, (January 1983), pp. 154-155.

Explains the effect the Copyright Act of 1976 and its revision through Public Law 96-517 in December 1980 had on computer programmers. Discusses the rights of the original author. Describes the conditions of ownership and gives the advantages of copyrighting. Explains the procedure for applying for a copyright.

Westin, Alan, F. "Information Abuse and the Personal Computer." Popular Computing, Vol. 1, No. 10, (August 1982) pp. 112-116.

Reviews and explains past and present laws dealing with the protection of privacy in computerized information systems. Explains how home-computer owners, large businesses, and government organizations could have important information stolen by persons not belonging to their network system.

Wollman, Jane. "Are You Breaking the Law?" Popular Computing, (April 1982) pp. 99-106.

An article about copying programs of some sort to a blank disk. It's easy, but you have broken the law. U.S. copyright code is to protect from duplicating software.

Wollman, Jane. "Software Piracy and Protection." Popular Computing, Vol. 1, No. 6, (April 1982) pp. 99-100, 102, 104, 106.

Program piracy is reproducing software for unauthorized use. The summary of how this is done included the following ways: copying and giving the copied software to a friend, making changes in a company's program and producing a new version of it, and duplicating and selling another company's software.

G-7. PROGRAMMING

Beech, Graham. Sucessful Software for Small Computers. New York: John Wiley & Sons, 1982.
A welcome attempt to bring the principles of structured programming to BASIC users.

Blank, George. "The Programmer's Guide to Programmer's Guides." Creative Computing, Vol. VIII, No. 11 (November 1982) pp. 170-176.

Brothers, Hardin. "The Next Step." 80 Micro, No. 37 (February 1983), pp. 38-39.
A regular feature on combining Basic and machine language, this month's article deals with fixed location routines. Information is given for tape or disk users. The author assumes the reader already knows certain programing techniques so this column is not for the beginner.

Brown, Jerald R. Instant Freeze-Dried Computer Programming in Basic. Beaverton, OR: Dilithium Press, 1982
This book is written for the person with no prior computing experience.

Busch, David. "Nine Programming Tricks." 80 Micro, Anniversary Issue (1983), pp. 56-58.
Many items are offered to make programming easier. However, Busch gives nine shortcuts for faster BASIC programming--easier backups, macro commands, renumbering, cross-referencing, and block moves.

Collopy, David. "Software Documentation: Reading a Package by Its Cover." Personal Computing, Vol. 7, No. 7, (February 1983) pp. 124-136.

Conrad, James A. "FOR...NEXT Loops." 80 U.S., Vol. 6, No. 5 (May 1983), pp. 90-91.
An explanation of looping...the ability of a computer to perform a repetitive task a number of times. Programming tips for FOR...NEXT loops are listed.

Ditlea, Steve. "Marketing Your Software." Popular Computing, Vol. II, No. 7, (May 1983), pp. 99-104.
The author discusses the choice of a publisher for an individuals's home-grown program.

Ledgard, Henry and Andrew Singer. "Elementary Basic: 'Adventures of Sherlock Holmes and the Analytical Engine.'" Popular Computing, Vol. 1, No. 9, (July 1982), pp. 86-99.

Reviews an important book for novices. Cleverly written as a Sherlock Holmes mystery, this excerpt presents a simple explanation of the strange-looking variables found in written programs. Accompanying program is written in generalized BASIC.

Mackey, Kevin and Twila Selsnick. "A Style Manual for Author of Software." Creative Computing, Vol. 8, No. 8 (August 1982), pp. 110-111.

Presents 25 program standards established at Lawrence Hall of Science which serve as a guide for writing or modifying programs. Standards cover the following aspects of programming: beginning the program, instructions, input, and ending the program. These standards reflect an attempt to make progams self-explanatory, easy to understand and use, and relatively free of bugs.

Salkind, Neil J. "Selling Your Software." 80 Micro, No. 36 (January, 1983), pp. 104, 106, 108.

If you spend time making up a program and want to sell it or put it on the market, Salkind tells you what you should do--suggesting the handling of all the sales and marketing yourself over working with commercial publishers. He tells what will happen to your program if sold through a publishing company and what the company expects from you.

The', Lee. "Educational Software for the Home." Personal Computing, Vol. VI, No. 6, (June 1982) pp. 48-52, 102-110, 114.

This article concerns the how-to evaluation of home educational software by parents.

Weersing, Spenser. "The Sum of its Parts." 80 Micro, Anniversary Issue (1983), pp. 60-68.

Beginning students of BASIC often have difficulty writing programs that work because of poor design techniques. Good BASIC programming begins with an organizational plan. This article gives five steps of good technique design that will lead to programming in a logical manner.

Wiles, James P. and George Sewart. "What Happens When the Lights Go Out?" Personal Computing, (August 1982) pp. 50-72.

Explains how to prevent lost data by employing backup power-supply devices. Authors include a chart on power conditions, a glossary of electrical-power terms, and a reginal map showing the relative frequency of problem storms.

Wood, D. E. "Condense Your Programs." The Color Computer, Vol. 1, No. 3 (May 1983), pp. 19-22.
Explains COMLINE software which enable you to create multi-line statements automatically when programming without sacrificing memory and execution speed.

G-8. PROGRAMS FOR THE VOCATIONAL EDUCATION CLASSROOM

Ahl, David H. "Comparing Prices." Creative Computing, VIII, No. 9 (September 1982), pp. 112-116.
The author set up this program in about two hours, and it can be updated in about 15 minutes. This same format could be varied for any kind of price comparison. Could be an excellent consumer education tool.

Allison, Dana B. "King Komputer." 80 Microcomputing, No. 28 (April 1982), pp. 302-304.
Program to teach kids how to read a ruler.

Asp, Elaine H. "Development of a Computer-Assisted Program for Undergraduate Instruction." Journal of Nutrition Education. Vol. 13, (1981), pp. 91-95.
Menu-planning concepts, teaching and learning, theory, and computer-assisted instruction were integrated to develop an interactive computer-assisted instructional menu planning program. The program was used to study the manner in which student and expert menu planners use knowledge when evaluating and revising a problem menu.

Cuchna, Mike. "Helping Students Think About Marriage and Education." Creative Computing, VII, No. 12 (December 1981), pp. 240-47.
A description of a computer program designed to help high school students develop skills in decision-making and goal setting relative to their marital and educational objectives. Developed for a social studies unit, this program has practical applications for several home economics units. The program is included.

Evans, Christopher. "Microcomputers in the Classroom--An Invitation to the (Near) Future." Today's Education, Vol. 71, No. 2 (April, May, 1982), pp. 11-15.
The impact of computers has made a difference in the classrooms. Computers for classroom purposes are becoming very popular. The effects of having these in the classroom, their use, and benefits to the students are discussed. Motivation is the author's goal for each student.

Fonosch, Gail G. "Looking Back: A Home Economist in 1995." Journal of Home Economics, Vol. 72, pp. 27-30, Fall, 1980.
The author reviews life in the 1970's and 1980's from the viewpoint of a home economist living in the

future--1995. Focuses are on family and community, role of community, lifelong learning centers, the role of computers, and information retrieval.

Friedheim, Stephen. "Do You Care About the Future of Business Education?" Business Education World, Vol. 62, No. 5 (May-June 1983), pp. 3-5.
Because of the lack of money, many schools are cutting out business education courses. In this article 12 ways to save business education were given.

Gangel, David M. "Let's All Teach Keyboarding." Business Education, Vol. V, No. 3 (April 1983), pp. 24-25.
In order to prepare students for the future, administrators, guidance counselors, teachers, and parents must recognize the value of keyboard skills and provide programs to ensure that all students have the opportunity to become keyboard-proficient.

Gilsdorf, Jeannette and Martha H. Rader. "Preparing for the Technological Revolution in Business Communication." Business Education Forum, Vol. 37, No. 1 (October 1982), pp. 24-27.
Because of the fast-paced trend toward high-tech communications and economic pressures, business education must assume the responsibility to help prepare today's students for the high-tech world of the future.

Haden, Harold. "Are You Teaching Word Processing?" Business Exchange, Vol. V, No. 3 (April 1983), pp. 23-24.
The article stresses that word processing should be a part of every office education program. As teachers teach keyboard, they should also incorporate language drills in the class, they should make the sloppy learner see that he or she is going to do a drill over and over until mastery. They should have individualized drills to fit their needs, and the teacher should start early to develop these skills.

Haff, Christine M. "Word Processing." Business Education Forum, Vol. 36, No. 4 (January 1982), pp. 19-20.
Because of cost, it is important for administrative personnel to purchase equipment that will integrate data processing and word processing operations. Business educators must prepare students not just for word processing or data processing as separate entities, but as subsystems of a more comprehensive information processing system utilized as a support function of a business or industry. Through intergration, computer capabilities can be increased for the same amount of hardware dollars.

Halvorsen, Nancy. "Training to Use Microcomputers for Accounting Procedures." Journal of Business Education, Vol. 57, No. 7 (April, 1982), pp. 270-271.

Halvorsen discusses why computers should be used in an accounting class. The ways they can be used for teaching accounting, what the students can do on them, and the outcome of computer uses in the accounting class were presented.

Hausafus, Cheryl A. "Computer Applications in Teacher Education." VocEd Home Economics Insider, Vol. 58, No. 4 (May 1983), p. 32b.

Explores the interest of computers to home economics education students both as educational tools and as home appliances. Incorporates features of simulation, tutorial dialogue, graphics, record keeping, test administration, and decision making.

Hills, Alvina M. "A Computer-Assisted Nutrition Education Unit for Grades 4-6." Journal of Nutrition Education, Vol. 5, p. 19, Mar. 1983.

A computer-assisted instructional unit was developed to identify four food groups outlined in Canada's Food Guide, place specific foods in correct groups, and identify foods not belonging to the four groups. Animated color-coded keys are used to represent the food groups.

Jaffe, J. A. "Technologies of the '80's: Their Impact on Home Economics Occupations." Journal of Home Economics, Sept. 1982.

This report is one of seven that identifies major new and emerging technological advances expected to influence major vocational education program areas and describe the programmatic implications in terms of skill-knowledge requirements, occupations most directly affected, and the anticipated diffusion rate.

Kimmel, Stephen. "Better Nutrition Bite by Byte." Creative Computing, VII, No. 7 (December 1981), pp. 78-88.

This article evaluates seven software programs for nutrition and diet control. Entertaining and easy to read. A list of computer programs that relate to diet is included with prices and addresses. Good.

Kupsch, Joyce and Rhonda Rhodes-Hanna. "Promoting Business Education Through Teaching Basic Skills." Business Education Forum, Vol. 37, No. 8 (April/May 1983), pp. 20-23.

In providing employees for tomorrow with a strong foundation, the back-to-basic concept in shorthand, typing, and accounting must be expanded to include communication competencies, computational competencies, keyboarding competencies, and a wide variety of others.

Lambrecht, Judith C. "New Microcomputer Teaching Competencies." Balance Sheet, Vol. 63, No. 5 (March 1982), pp. 233-236.

This article is based on what the teacher should do and know before and during the teaching of a computer class. It focuses on the "teacher" requirements.

Lambrecht, Judith. "At Home with the Computer." Vocational Education, Vol. 57, (April 1982) pp. 45-51.

Discusses the uses and benefits of the home computer: energy conservation, electronic mailbox, working at home, homework, and home protection. Also discusses entertainment and recordkeeping uses, nutrition and exercise programs, and how all this will affect family interaction.

Lappen, William. "Home Buying by Computer." Creative Computing, VI, No. 5 (May 1980), pp. 88-90.

A short program that provides for comparison of "renting" costs with "purchase of a home" cost. Useful applications for housing and consumer education units in home economics curriculum.

McClure, James. "Shoplist: The Latest Kitchen Utensil." Creative Computing, VI, No. 5 (May 1980), pp. 74-80.

The kitchen shopping list is simplified using this program. This could be a practical program for the high school home economics lab. Students could learn to operate this program and save much time for the teacher and other class members. The program is included.

Miller, Dodie. "Using Microcomputers in Accounting Programs." The Balance Sheet, Vol. 63, No. 5 (March 1982), pp. 263-264.

An explanation of how successful a pilot program has been that is set up in the state of North Carolina for students to have "hands-on" computer experience by applying previously learned accounting principles to computer software programs.

Morrison, E. "Using an Apple in Nutrition Education." Computer Education, (Nov. 1982) pp. 20-21.

The use of an Apple II microcomputer as support for nutrition instruction with home economics, nursing, and

catering students is detailed. The work done so far is viewed as successful and encouraging.

Nickel, Stanley L. "Teaching a Nutrition Unit Utilizing a Computerized Analysis of Students Diets." American Journal of Pharmaceutical Education. (Summer 1982) pp. 56-58.

A three-lecture unit is described in which fourth-year undergraduate pharmacy students at the University of Toledo are taught basic nutrition principles. Students participate in lecture preparation through a nutritional attitude and knowledge survey and a 10-day diet inventory that is analyzed by a computer program.

Olivas, Jerry. "Using Timesharing to Teach Computer Skills." The Balance Sheet, Vol. 64, No. 2 (November/December), pp. 109-112.

Timesharing can offer the office occupations personnel and the business educator a way to receive instruction in the use of microcomputers. For instructional purposes, time sharing can be arranged.

Perelman, Charles. "Forms Maker." 80 Micro, No. 35 (December 1982), pp. 356-358.

A short article with program for creating business forms in Basic on a TRS-80, Model II. Useful for small businesses and has possible applications for the home economics classroom teacher in preparing forms for student use such as garment grade sheets, food lab planning sheets, etc.

Richard, M. R. "Educating the New Office Worker." Business Education World, Vol. 62, No. 5 (May-June, 1982), pp. 11-12.

The article concerned the curriculum conference, "Educating the New Office Worker," held for the purpose of providing a forum for discussion between educators and industry. As a result, teachers learned that employers need to be aware of the word processing program offered in their school and to try to help students develop a good work attitude.

Rider, Michael. "Word Processing and Office Systems." The Balance Sheet, Vol. 63, No. 3 (December/January), pp. 127-129.

In order to provide today's students with the necessary skills for the world of work, business educators must master new equipment skills and keep abreast of what is happening in the realm of the automated office.

Roberts, Don. "Is There a Micro in Your Future?" Business Education Forum, Vol. 37, No. 1 (October 1982), pp. 27-30.

If business education is to give students up-to-date instructions, the microcomputer must be purchased and this must be done with care. Because the microcomputer now has a lower price tag because of the development of the chip and competition, it is important that you talk to as many vendors as possible and read everything you can about computers in order to make a wise choice.

Robinson, Jerry W. and Gary L. Johnson. "Learning Microcomputer Keyboard." The Balance Sheet, Vol. 63, No. 4 (March 1982), pp. 228-231.

Values of microcomputer assisted typewriting instruction/practice are discussed: modeling, reinforcement, individual goal setting, pacing, and differentiated practice.

Russell, Michael. "Marketing and Microcomputers--A Perfect Combination." The Balance Sheet, Vol. 63, No. 6 (April 1982), pp. 292-294.

Provides several reasons to include the microcomputer in the marketing and distributive education curriculum, and a method is suggested for adapting an existing curriculum to include the microcomputer.

Skudrna, Vincent. "The Auditing of Computerized Accounting Systems." Journal of Business Education, Vol. 57, (Feb. 1982) pp. 190-192

Describes an investigation undertaken to indicate the curricular content (knowledge and skills) needed to prepare the accounting student to audit computerized accounting systems. Areas studies included programing languages, data processing, desired course training, and computer audit techniques.

Stewart, Jane and Buford W. Jones. "Keyboarding Instructions: Elementary School Options." Business Education Forum, Vol. 37, No. 7 (April 1983), pp. 11-12.

The author of this article believes the student should be taught keyboarding before using the microcomputer, especially if the student later decides to enter a vocational education program.

Sunkel, Mary Jane and Martha Cooper. "Teaching Touch Keyboarding on Computer Terminals." Business Education Forum, Vol. 37, No. 1 (October 1982), pp. 18-21.

The authors of this article discuss the fact that touch keyboarding on the computer offers several advantages: (1) It prepares students for the electronic office. (2) It virtually eliminates the tedious task of grading papers, thereby providing the teacher with more time to review student progress and assess needs. (3) Greater consistency and accuracy in grading will be attained. (4) It makes learning a skill easy and pleasurable.

Tinsley, W. A. "Speedy Spend." Creative Computing, VI, No. 5 (May 1980), pp. 64-71.

Analyzing a family's budget would be a breeze with the program included in this article. Many practical applications for consumer education and family finance classes are possible as well as personal family budget uses.

Uthe, Elaine. "The Computers in Our Lives." Vocational Education, Vol. 57, (April 1982) pp. 26-29.

Describes the growing use of computers in our world and how their use will affect vocational education. Discusses recordkeeping and databased functions, computer graphics, and how they will affect office education, home economics education, marketing and distributive education, and trade and industrial education.

Wiggers, Thomas B. "A Computerized Test Question Storage and Examination Preparation System." Educational Computer, Vol. II, No. 2 (March/April 1982), pp. 30-31.

This system makes it easier for a teacher to maintain a file of up-to-date, quality questions that are readily accessible. The program is available on minidiskette at $40.00, or a print-out of the system is available for $20.00. Of interest to all teachers.

Zamberlin-Maifn, Annette. "AgriStar: America's Agricultural Information and Computing Network." TRS-80 MicroComputer News, Vol. 5, Issue 4 (April 1983), pp. 35-36.

There are several data bases already on the market. A new data base is called AgriStar. This network consists of information and computing services for farmers, ranchers, farm managers, Ag bankers, elevator operators, extension specialists, and agribusiness executives.

G-9. SELECTION OF HARDWARE

Ahl, David H. "Buying a Printer." Creative Computing, Vol. 9, No. 3 (March 1983), pp. 12-19.
An analysis of factors to consider when buying a printer. Print quality, print type, paper type, speed, noise, controls, graphics capability, interfacing, servicing, and longevity are discussed. Reviews a cross-section of available printers.

Berger, Ivan. "How to Buy a Disk System." Popular Computing, Vol. 1, No. 6, (April 1982), pp. 92, 94, 96.
The main considerations for buying floppy disk systems are capacity, compatibility, and speed. Each one of these considerations is explained in detail. The pros and cons for each consideration are also given.

Blotnik, Srully. "Finding Your Way Through the Maze." Forbes, Vol. CXXXII, No. 1 (July 4, 1983), p. 182.
Sound advice to persons planning to buy a computer is that they first study the buyers' guides available in order to avoid joining the estimated more than half of small computer owners who are frustrated with the computers they have bought. Stresses the need to become knowledgeable before talking to salespersons. Lists several good guides for computers and software, such as Microcomputer Buyer's Guide, by Tony Webster, which reviews products from more than 180 microcomputer manufacturers.

Ditlea, Steve. "The Apple III." Popular Computing, Vol. I, No. 11, (September 1982), pp. 98-103.
An analysis of the Apple III. List the pros and cons for the consumer.

Edward, John. "Apple IIe." Popular Computing, Vol. 2, No. 5, (March 1983) pp. 109-110, 187-189.
The "e" stands for enhanced. The standard features of this computer are discussed. New software is designed to run in the new computer as are Apple II and II plus software.

Gabel, David. "Monitors: The Better to See Your Data Wit." Personal Computing, Vol. VI, No. 12 (December 1982), pp. 112-120, 125-126, 196-197.
A discussion and comparison of features of video monitors. Includes discussion of uses of the computer and suggestions for the kind of monitor best suited for various uses.

"The Giant Takes Command." Newsweek, CII, No. 2 (July 11, 1983), pp. 56-58.
Discusses the development and impact of the IBM personal computer. It is concerned with the competition and production decisions made by the competing companies.

Keough, William. "Do You Need A Small Business Computer?" Popular Computing, Vol. I, No. 11, (Sept. 1982) pp. 124-125.
Presentation of two book reviews that would be worthwhile for businessmen about to invest in small business computers.

McFarland, Gary. "Personal Computers." Houston House and Garden," (February 1983), pp. 95-100.
A discussion of three home computers - Apple III, TRS80, and the IP20. Presents guides on which one to buy to serve your needs. Gives explanations and suggestions on use, care, and installation of computers.

Rogers, Michael. "How Computer Salesmen Size You Up." Personal Computing, Vol. VI, No. 12 (Dec. 1982) pp. 48-54.
A successful customer must have some idea of what he's going to use the computer for. A customer may purchase from a mail-order house at a cheaper price, sacrificing service and support. The best defense against a "snow job" salesman is to have a bit of know-how about computers. Be open-minded about sales suggestions.

Rothfeder, Jeffrey. "A New Generation Arrives." Personal Computing, Vol. 7, No. 2 (February 1983), pp. 48-53.
Improvements in ease of use of personal computers. Examples of hardware and software in this "easy" computer age.

Stewart, George. "The Apple II." Popular Computing, Vol.1, No. 3 (Jan. 1982), pp. 24-26.
Apple II is said to be the easiest computer to operate for first time users. The standard features of the Apple II are described in detail.

Veit, Stan. "Desk Top Appliance Computers." Computers and Electronics, Volume 21, No. 7 (July 1983), pp. 62-66.
The Cromemco C-10 and Morrow designs of microcomputers include the machines and software in the total prices.

Veit, Stan. "Once-Upmanship From Radio Shack." Computers and Electronics, Volume 21, No. 5 (May 1983), pp. 51-55.

The new TRS Model 100 briefcase computer combines word processing on an eight line display with an autodial modem and up to 32K of computing power. It loads and stores by use of a cassette recorder. This computer may be connected to other TRS-80 computers.

Whitney, Richard. "Coping with Cassettes." 80 Micro, Anniversary Issue (1983), pp. 590-591.

For cassette users, Whitney gives several general tips and maintenance procedures for use of the cassette. If you use his guidelines, it will make the cassette recorder more reliable and enjoyable to use.

Willis Jerry and Merl Miller. "How to Buy Your Own Computer." Computers for Everybody, (1983) pp. 41-58.

This article brought out very vividly that the first major step in selecting a computer is to identify the jobs you want done. The computer you buy should have a range of software available for the applications of interest to you.

G-10. SOFTWARE REVIEWS AND USE

Allen, Larry. "Household Finance." Creative Computing, Vol. IX, No. 4, (February 1983), pp. 54-60.
A review of "The Accountant" by Decision Software. This program is thorough, eaily read, and complete. After several months of heavy use, the author has discovered no software bugs or error trapping problems.

Beil, Donald H. The Visicalc Book. Reston Publishing Co., Reston, VA: 1982.
A tutorial program for use with Apple computers.

Bowman, Timothy K. "Exploring VisiCalc." 80 U.S. , Vol. 6, No. 5 (May 1983), pp. 70-71.
The use of VisiCalc command files causes the VisiCalc program to perform multiple steps without the operator's intervention. Includes mass deleting of entries, inserting long formulas or values, and setting mass formats.

Coffey, Mike. "File Managers." Creative Computing, VIII, No. 9 (September 1982), pp. 43-48.
n evaluation of PFS (Personal Filing System) by Software Publishing Corporation. For use on Apple II (at $125) or Apple III (at $ 175); it is rated as an ideal database management program for first time computer users.

Copeland, Heidi. "Home Safe Home." Popular Computing, (April 1982), p. 108.
Four software disks describing a particular home hazard designed for high school students and adults with below normal intellectual and emotional development.

Dahmke, Mark and Ed Jones. "CP/M Operating System." Popular Computing, Vol. 2, No. 4, (February 1983), pp. 102-108.
The article discusses the inside operating system of the CP/M. The various commands used with the system are explained.

Dennison, Darwin. "The DINE Microcomputer Program: An Innovative Curricular Approach." Health Education, Vol. 14, (Mar/Apr 1983), pp. 44-47.
A computerized nutrient analysis program, DINE, is described. It provides feedback on calorie and nutrient intake to enhance individual responsibility for nutrition. It is used in nutrition education and athletic training programs, and by patients with weight and diet-related problems.

Ditlea, Steve. "Visicalc and 'Visiclones'." Popular Computing, Vol. I, No. 11 (September 1982), pp. 48-54.
An analysis of bestselling business applications software for microcomputers. Includes discussions of Visicalc, Supercalc, Calcstar, and Multiplan.

Edwards, John. "The Disk-Based Bible." Popular Computing, (February 1983), pp. 128-132.
A description of a new application of the computer that could revolutionize home Bible study. Priced at $160.00, the program has eight disks and a 35 page documentation. Bible scholars and lay persons find this a useful Bible study tool.

Fastie, Will. "Keeping VisaCalc Smooth and Silky." Creative Computing, Vol. VIII, No. 9 (September 1982), pp. 78-79.
A description of STAN, a bi-monthly publication with pointers on how to use VisiCalc, articles on technique, detailed examples, and best of all, mind benders. Available at $30 a year from STAN Subscriptions, P. O Box 815, Quincy, MA 02169.

Gaithersburg, M.D. "Anti-math." 80 U.S., Vol. VI, No. 5 (May 1983), pp. 92-95.
This program is an arithmetic game suitable for elementary school students. There are strong points as an educational exercise: the ability to set skill level and to choose the type of problem.

Hassall, J.C. "Touch-Typing Tutor for the Heavy-Handed." Popular Computing, Vol. 1, No. 6 (April 1982), pp. 89 and 91.
A review about a piece of software called Touch-Typing Tutor which not only teaches you to touch type, but also hones the necessary skills to type flawlessly and quickly.

Hix, Jeffrey. "Super Scripsit." 80 Micro, No. 36 (January 1983), pp. 69-71.
A description of the new features of Super Scripsit. Explains format of manual and workbook and the use of the Help Menu. Includes a description of different printers as well as the features of the printers.

Keller, Wynne. "Profile III Plus." 80 Micro, (October 1982), pp. 308-312.
Profile III Plus comes on two disks: the creation disc and a run-time disk. It has a capacity of about 250 records in drive 0. Profile III Plus allows math formulas using addition, subtraction, multiplication, or division. Up to 16 formulas can be written using up to

20 fields per formula. Initialization, add/update/ inquire, reports/labels, and special features were discussed.

Keller, Wynne. "Forthwrite." 80 Micro, No. 36 (January 1983) pp. 100-103.
Introduces a newcomer to the field of word processors. Gives other models with which the Forthwrite is compatible. Gives the features of the directory and describes the various functions available.

Levy, Steven. "How I Learned to Use Wordstar." Popular Computing, Vol. 2, No. 4, (February 1983), pp. 116-118.
Mr. Levy expands on how he learned to use Wordstar and how much time it saves him. Many things that can be done with it are listed. He gives his ideas on better mastery.

McWilliams, Peter. "Word." Popular Computing, Vol. 1, No. 5 (March 1982), pp. 120-121.
A review of a dictionary software that, according to the author, does more than any of the others but costs only $75. Describes such features as LOOKUP, which will, when a word is typed in, list for the user all the similar words, one of which he will probably recognize as the one he needs.

Robinson, Dan. "SuperScripsit." Creative Computing, IX, No. 2, (February, 1983), pp. 63-66.
A brief and fast profile of SuperScripsit. The author describes this as a truly fantastic program with few "warts." He gives the special features that constrast with Scripsit.

Schilling, Robert, Jr. "Microcomputer Data-Transfer Software." Popular Computing, Vol. II, No. 4 (February 1983), pp. 138-148.
A review of three easy-to-use communication programs from Microcomputer, Inc., that let you transfer any kind of files at any time with or without an operator.

Schilling, Robert, Jr. "Datadex." Popular Computing, Vol. 1, No. 11 (September 1982), pp. 69-70.
Various components of the Datadex management package for Apple computers are outlined. Very informative and specific as to the strong and weak points of the programs. A good analysis for a potential buyer.

Watt, Dan. "Teaching Turtles." Popular Computing, Vol. 1, No. 9 (July 1982), pp. 48, 50, 52, 54, 56.
Presents philosphy behind the LOGO structure as well as advantages and disadvantages of its use.

Watt, Molly. "What is Logo?" Creative Computing, Vol. VIII, No. 10, (October 1982), pp. 112-127.
Logo is a computer language which was developed to provide an environment which allows learning to take place as naturally as possible. The language is interactive and allows the learner to edit, revise, and learn at the computer.

G-11. SOFTWARE SELECTION

Dillion, Nancy F. "How to Evaluate Computer Software." VocEd Home Economics Insider, Vol. 58, No. 4 (May 1983) p. 32d.

An analysis of problems associated with the selection and evaluation of software.

Mahlon, Kelly G. "Buying Software." Popular Computing, Vol. 1, No. 6 (April 1982), pp. 27-30.

Concentrates on choosing applications software. Lists established guidelines which, when followed, will aid in selecting software tailored to the user. The golden rule in choosing software is "Buy what you need."

Mahlon, Kelly G. "Buying Software." Popular Computing, (April 1982), pp. 27-36.

Gives the requirements of a successful software hunt. Gives a number of rules to follow and sources to consider. Lists qualities to consider in evaluating sources.

G-12. SPECIAL NEEDS

Leichtman, Kerry. "BIPED: Computers and the Handicapped." 80 Micro, No. 28 (April, 1982), pp. 114, 116, 118, 120, 122.

BIPED (Business Information Processing Education for the Disabled) is a program providing help and assistance to the disadvantaged--realizing potentials of the physically handicapped and supplying training programs. This is a description of this program and the locations of those in operation.

Leichtman, Kerry. "Making More Possible." 80 Microcomputing, No. 26, (Feb. 1982) pp. 128.

How micros help the handicapped.

Rigsby, Mike. "Voice-Controlled Typewriter." 80 Micro, (December 1982) pp. 72-77.

The physically handicapped can produce printed text with this sound-controlled program. Could be used with handicapped people who have disabilities that prevent them from writing or typing, yet have normal intellects.

Thayer, Betty. "Computer Aids Help Handicapped." 80 Microcomputing, Issue No. 22 (October 1981), pp. 73-77.

Explains computer aids which make it easier for the handicapped to work, communicate with others, and seek emergency help. Limitations of the computer aids and information networks which are available are also discussed.

G-13. TELECOMPUTING

Barden, William, Jr. "Smart Terminals." Popular Computing, Vol. 1, No. 10, (August 1982), pp. 117-118, 120-121.
Small computer data communication is explained by the use of modems that convert pulses into audio frequencies and transmit them over telephone lines. The many uses of dumb-terminal software are explained, and several special features are also explained.

Barth, Richard. "The Handicapped Educational Exchange." Educational Computer, II, No. 2 (March/April 1982), pp. 48-49.
An interesting article about HEX, a computerized bulletin board that can be called by telephone. In operation two years, the system was built by amateur radio and computer hobbyists. The deaf can use this system.

Dahmke, Mark. "Electronic Mail." Popular Computing, Vol. 1, No. 9, (July 1982) pp. 108 and 110.
A very interesting account about electronic mailing today and in the future. There are three general electronic mail services that exist, including The Source, Compuserve, and Telemail. The future electronic-mail equipment will be a combined telephone, videotex, and a data terminal.

Dahmke, Mark. "Home Services on the Source and Compuserve." Popular Computing, Vol. 1, No. 10, (August 1982) pp. 107, 110.
The Source and Compuserve are found to have a large number of Home Services entries which include air-schedule databases, college planning information, TV previews, electronic mail systems, reference library information, and much more. The Source and Compuserve are explained in detail and compared as to what each one offers.

Dahmke, Mark. "Let Your Fingers Do the Talking." Popular Computing, Vol. 1, No. 12, (October 1982) pp. 134-136.
Electronic bulletin board systems described, gives specific names of systems and addresses and phone numbers; method of joining an electronic bulletin board detailed.

Ditlea, Steve. "Small Investors Bullish on Stock Market Programs." Popular Computing, (April 1982) pp. 46-50.
You can get up-to-the-minute information on your stock portfolio in a snap with small computers. Using a personal computer and appropriate software, a small

investor can turn a desk top computer into a facsimile of a broker's office.

"Do-It-Yourself Computer Solutions." Infosystems, Vol. XXX, No. 5, (May 1983) pp. 70.
A report of how the city of Anchorage, Alaska, is using the information center concept to give 11 users, including the departments of Transportation, Law, and Public works, access to computer workspace in order to solve their own problems. Explains how information centers may be staffed and operated, using IBM's Virtual Storage Personal Computing (VSPC) software. Emphasizes that once people see how the system can solve their problems, they think of more uses for the computer.

Faircloth, Margo. "Telecommuters: What It Takes, What It Costs." Personal Computing, (May 1982), pp. 44.
This article talks about the three levels of computer and the cost of each level. What it takes for telecomuting which is just starting to come out of the shadows and not the normal way to do business. Start low and add.

James, David. "Networking: A Powerful Tool for Personal Communication." Personal Computing, VIII, No. 1 (January 1983), pp. 48-54.
Discusses the concept of a local area computer network. Shows the potential of a new and evolving network. Discusses some of the basic definitions involved in networking. Provides some guidelines in hooking up. Discusses the three configurations important in the world of networks. Gives some guidelines for planning, shopping, and checking references when considering networking.

Liddil, Bob. "Captain 80 and the Magic Software Machine." 80 U.S., Vol. VI, No. 5, (May 1983) pp. 64-65.
A community access bulletin board gives computerists nationwide a free place to leave messages for each other and provide files of a particular interest to the system owner and his friends. Also contains club news and allows selling of articles; users can communicate privately or publicly.

McClain, Larry. "Getting Magazines from a Menu, Not a Newstand." Popular Computing, Vol. 2, No. 1, (November 1982) pp. 142, 146-147.
Discusses how someone can have their magazine or newsletter added to The Source's user-publishing database, called Public. Any Source subscriber can

read the files(s). Any time a reader spends one daytime hour reading your electronic publication, you get 9 percent of the regular $18 per hour rate in royalties.

Miastkowski, Stan. "Modems: Hooking Your Computer to the World." Popular Computing, (Nov. 1982) pp. 88-92.
Telecomputing, linking your computer to other computers using the telephone lines. A fast growing field in personal computers.

Pepper, Cary. "Feedback." Creative Computing, Vol. VIII, No. 8, (August, 1982) pp. 114-115.
A brief report of a three-month experiment in getting Source subscribers to express their opinions concerning the TV programs "Hill Street Blues" and "Simon & Simon." Envisions a time when computers will be used to replace the Nielson ratings and when viewers may, through computers, help to determine the outcome of TV programs.

Stern, Marc. "Future Phones." Popular Computing, Vol. 2, No. 1, (November 1982) pp. 122-124.
A very interesting look at what is in the future for telephones. The phone will deliver and send mail, transmit messages to and from other phones, store or retrieve information, plus much more.

Wollman, Jane. "Banking and Shopping at Home." Popular Computing, Vol. II, No. 12, (Dec. 1982) pp. 75-78.
In-home electronic shopping and banking services are expected to become a major retailing force by 1980. Eventually you'll be able to access information about and buy virtually any product you want whenever you want it.

H. LETTER TO STATE DIRECTORS

Northeast Louisiana University
College of Pure and Applied Sciences
Department of Home Economics
(318) 342-2155

June 3, 1983

Dear

We are the recipients of a vocational grant from the State of Louisiana to evaluate computer literacy development in vocational education. A survey is being made of all state directors of vocational education. We are interested in finding out how microcomputers are being used in other states. Please complete the questionnaire or give it to a staff member who can provide the information for your state. A stamped envelope is enclosed for your convenience in returning the instrument by June 15 to:

Dr. Ann B. Kapp, Project Director
Department of Home Economics
Northeast Louisiana University
Monroe, LA 71209

Thank you for your help with this project. If you are interested, we will be happy to share a summary of the results with you.

Sincerely yours,

Ann B. Kapp, Ed.D.
Project Director

ABK:lp

Enc.

I. COMPUTER LITERACY SURVEY FOR VOCATIONAL EDUCATION

Directions: Please fill in the blank or mark an X in the appropriate space by the answer which best describes your state's efforts in developing computer literacy. Your responses will be summarized with those of other states, so you will not be identified individually.

1. What is the name of your state or territory?
   A.....
2. List the following information about the person who completed this survey.
   A. Name.....
   B. Title.....
   C. Address.....
   D. City, State, Zip Code.....
3. Give the name and address of a person in your state who would be a good contact on computer literacy and ultilization.
   A. Name.....
   B. Title.....
   C. Address.....
   D. City, State, Zip Code.....
4. Do you wish to have a summary of the results of the survey?
   .....A. Yes .....B. No
5. Has your state purchased microcomputers with vocational funds during the fiscal year from June 30, 1982 to July 1, 1983.
   .....A. Yes .....B. No (If the answer is no, skip to number 10.)
6. How many microcomputers were bought for junior high or secondary schools?
   .....A. 1 - 10 .....B. 11 - 50 .....C. Over 50
7. How many microcomputers were bought for vocational/technical schools?
   ....A. 1 - 10 .....B. 11 - 50 .....C. Over 50
8. How many microcomputers were bought for colleges and universities?
   .....A. 1 - 10 .....B. 11 - 50 .....C. Over 50
9. How many microcomputers were bought for use in vocational education in the state department of education?
   .....A. 1 - 10 .....B. 11 - 50 .....C. Over 50
10. How are computers being used in vocational education in your state?
   .....A. Teaching .....B. Record Keeping
   .....C. Vocational Records .....D. Scheduling
   .....E. Budgeting .....F. Inventory
   .....G. Word Processing H. Other (Please Specify.).....
11. Estimate the percentage of your teachers that are using microcomputers?
   .....A. 0 - 10% .....B. 11 - 25% .....C. 26 - 50%
   .....D. 51 - 75% .....E. Over 75%
12. How would you rate your state's involvement in the use of microcomputers?
   .....A. Minimal .....B. Average .....C. Optimal

PLEASE USE ADDITIONAL PAPER TO SUPPLY INFORMATION AS NEEDED.

13. If vocational education sessions on microcomputers have been conducted in your state during the year, please provide the following information for each workshop.

	1.	2.
A. TITLE OF SESSION (List)		
B. AREA SERVED (Check X)		
1. State		
2. Regional		
3. District		
4. County		
5. City		
6. School		
C. KINDS OF PARTICIPANTS (List)		
D. NUMBER OF PARTICIPANTS (List)		
E. CLOCK HOURS (List)		
F. PROCEEDINGS AVAILABLE (Check X)		
1. Yes		
2. No		
G. SOURCE (List Name and Address)		

14. Are other publications on the use of the microcomputer available from your state? If so, please list and give the source.

	1.	2.
A. PUBLICATION		
B. SOURCE		

15. Describe any software that has been developed and give the source.

	1.	2.
A. SOFTWARE TITLE		
B. SUBJECT MATTER		
C. KIND OF COMPUTER		
D. SOURCE		

Please return this questionnaire to:

Dr. Ann Kapp, Project Director
Department of Home Economics
Northeast Louisiana University
Monroe, Louisiana 71209

J. FOLLOW-UP LETTER TO STATE DIRECTORS

Northeast Louisiana University
College of Pure and Applied Sciences
Department of Home Economics
(318) 342-2155

June 24, 1983

/name/
/title/
/company /
/address/
/city,/

Dear /sname/:

While the response to the Computer Literacy Survey for Vocational Education has been very good, we would like for it to be better. In case your questionnaire has not been returned, a copy is enclosed. We do want /state/ to be included. Please complete your responses and return them by July 15 to:

Dr. Ann B. Kapp
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Thank you for your help with this project.

Sincerely yours,

Ann B. Kapp, Ed.D.
Project Director

ABK:lp

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nlu Monroe, Louisiana 71209

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L. SURVEY OF LITERATURE

SELECTED REFERENCES

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Nasman, Leonard O. "Computers Mean New Decisions." Voc Ed, Vol. 57, No. 3, (April 1982) pp. 36-38.

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